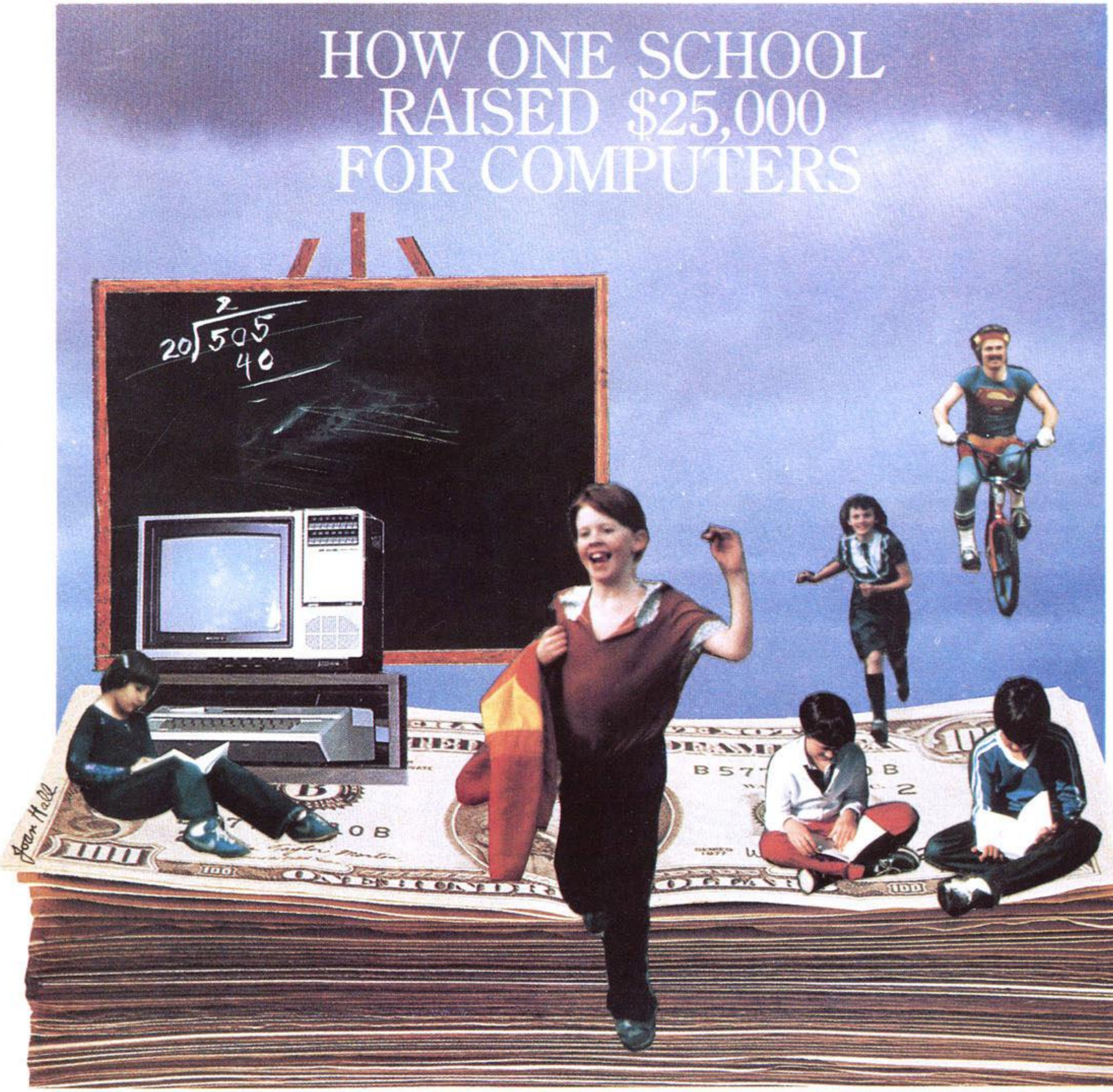
Volume 1, Number 4 $3.50

Scholastic's Magazine for Today's Elementary Classrooms

TEACHING and computers

Published by Scholastic Inc. January 1984



HOW ONE SCHOOL RAISED $25,000 FOR COMPUTERS

Write Your Own Adventure Stories! • Five Easy Graphics to Make

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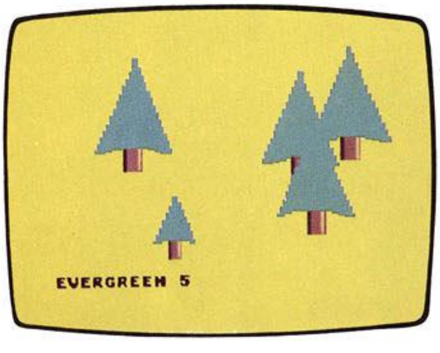
Help Them Share the Learning Experience With Color LOGO And a Network 2 Learning Lab

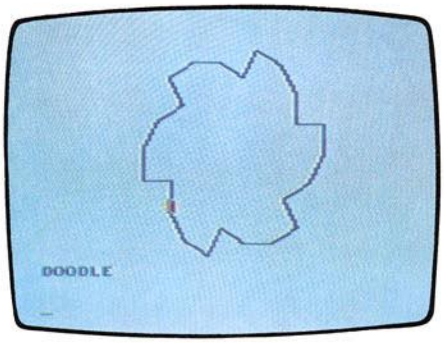
Tools for a powerful LOGO Lab. Radio Shack's remarkable Color LOGO programming language, combined with TRS-80® Color Computers and the Network 2 Controller, enables schools to create a computer learning lab at a very reasonable cost per student station. Up to sixteen student stations, each a low-cost 16K TRS-80 Color Computer, can be connected to the host computer, a 64K or 32K Extended BASIC Color Computer with one disk drive. This system allows teachers to send and receive LOGO procedures to and from the student stations, as well as save student-created procedures quickly and reliably on the host disk.



EVERGREEN 5

A language for learning. The Color LOGO language is designed to help students grasp graphic relationships and develop problem-solving skills. Through manipulation of a "turtle" on the screen, students learn to program. The benefits? The computer becomes a friendly learning tool, and students gain valuable insight into advanced mathematical, geometric and logical concepts through hands-on experimentation.

Even pre-schoolers can benefit. Children who haven't yet begun to read can use Color LOGO's "doodle" mode to create their own graphics using predefined one-key commands. As the pattern is drawn, a program is simultaneously created which allows the "doodle" to be recalled at any time.



DOODLE

Simple animation is a snap. The Color LOGO turtle can be changed into a variety of different shapes. Thus, students can create their own animation simply by redefining the turtle's shape as it moves.

Powerful extensions. Color LOGO features a "hatch" command which allows you to create multiple turtles that are capable of running separate programs simultaneously. You can execute virtually any number of turtle graphics programs all on the same screen.

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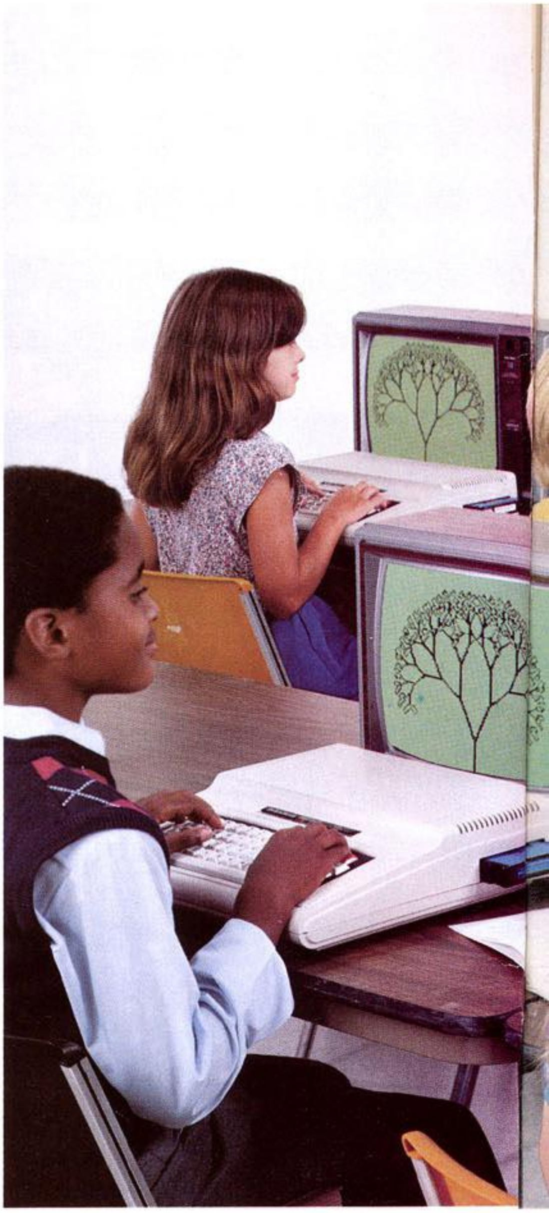

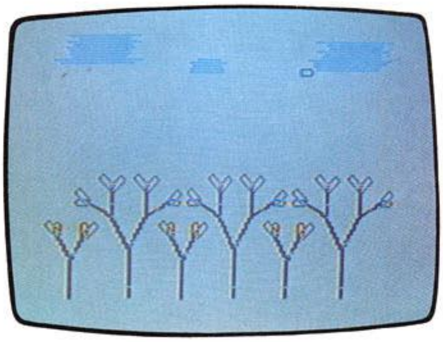

LT = left
HATCH
RT = right
BG = background
HT = hide turtle
BK = back
ST = show turtle
PD = pen down

your own TVs at each station. Systems connect to the Network 2 Controller ($499, 26-1211) with included cables.

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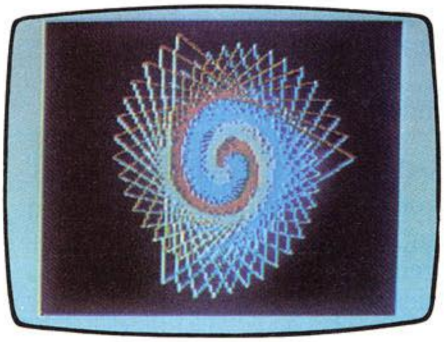

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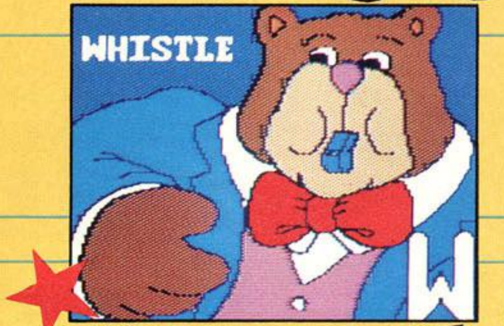
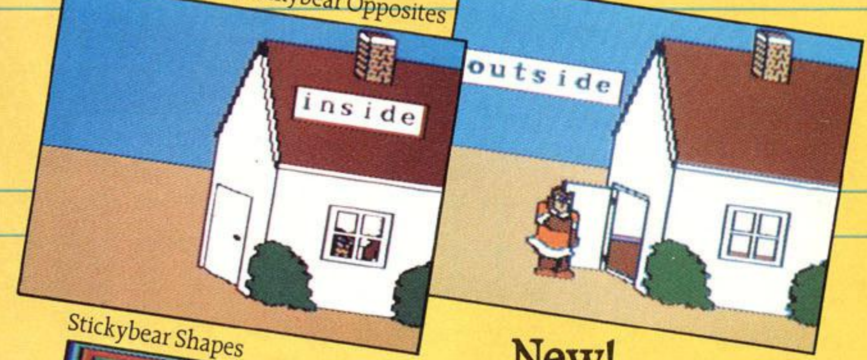
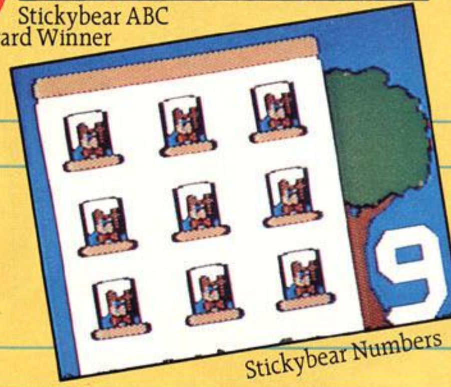


Stickybear ABC
Award Winner



Stickybear Opposites



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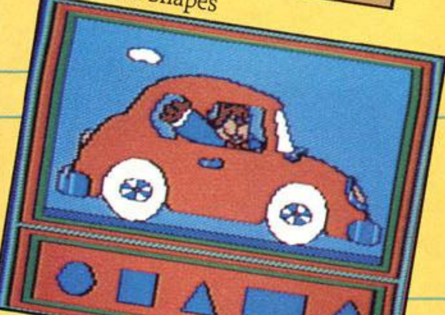

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Created by Richard Hefter, Janie and Steve Worthington and Spencer Howe for Optimum Resource, Inc.

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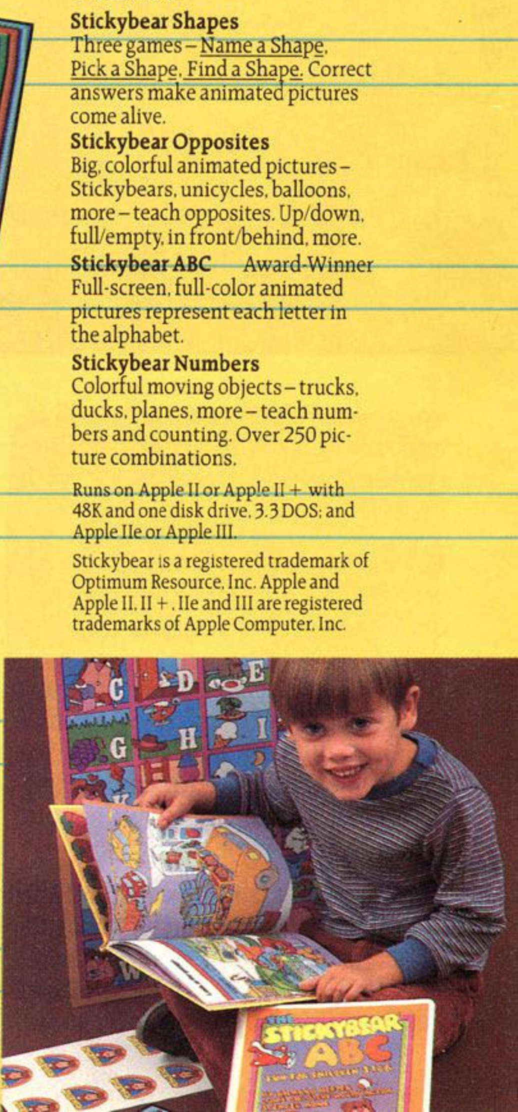

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TEACHING and computers™

Published by Scholastic Inc.
January 1984 Vol. 1, Issue 4

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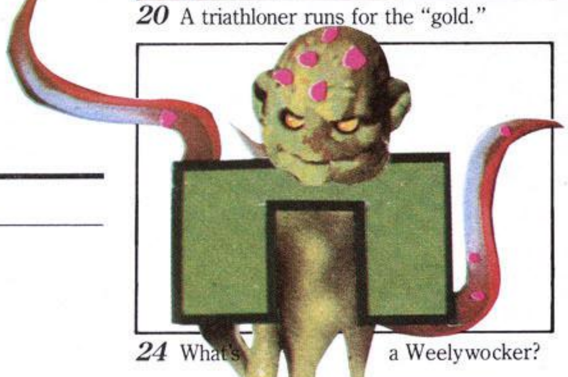

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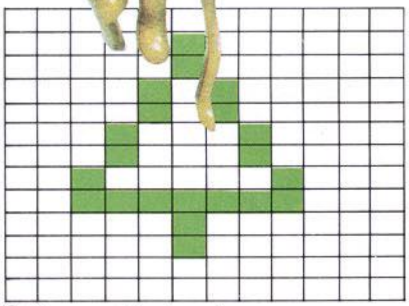

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TEACHING AND COMPUTERS (ISSN 0738-6087) is published monthly during the school year, September through May with a combined November/December issue, by Scholastic Inc., 730 Broadway, New York, NY 10003-9538 for $19 per year, $9.95 for five or more subscriptions to the same address. Single copy, $3.50. Application to mail at second-class rates pending at Monroe, OH 45050-2700 and at additional offices. **POSTMASTERS: Send notice of address changes and undelivered copies to Office of Publication, TEACHING AND COMPUTERS, Box 2700, 351 Garver Rd., Monroe, OH 45050-2700.** Address subscription correspondence to TEACHING AND COMPUTERS, P.O. Box 644, Lyndhurst, NJ 07071-9985. Canadian address: Scholastic-TAB Publications, Ltd., Richmond Hill, Ontario L4C 3G5; in the United Kingdom: Scholastic Publications, Ltd., Westfield Rd., Southam, Leamington Spa, Warwickshire, England DV330JH; in Australia: Ashton Scholastic Pty., Ltd., P.O. Box 579, Gosford, N.S.W. 2250, Australia; and in New Zealand: Ashton Scholastic Ltd., 7-11 Fairfax Ave., Penrose, Auckland 6, New Zealand. Available on microfilm through Xerox University Microfilms, Inc., 300 N. Zeeb Rd., Ann Arbor, MI 48106. Also available on microfiche through Bell & Howell Micro Photo Division, Old Mansfield Rd., Wooster, OH 44691. Printed in U.S.A. Copyright © 1984 by Scholastic Inc. All Rights Reserved. Member, Audit Bureau of Circulations. Permission is granted to make machine copies of material in this issue for classroom use only. **Permission to reproduce material in this issue, in whole or part, in any form or format, for all other uses, must be requested from the publisher.**

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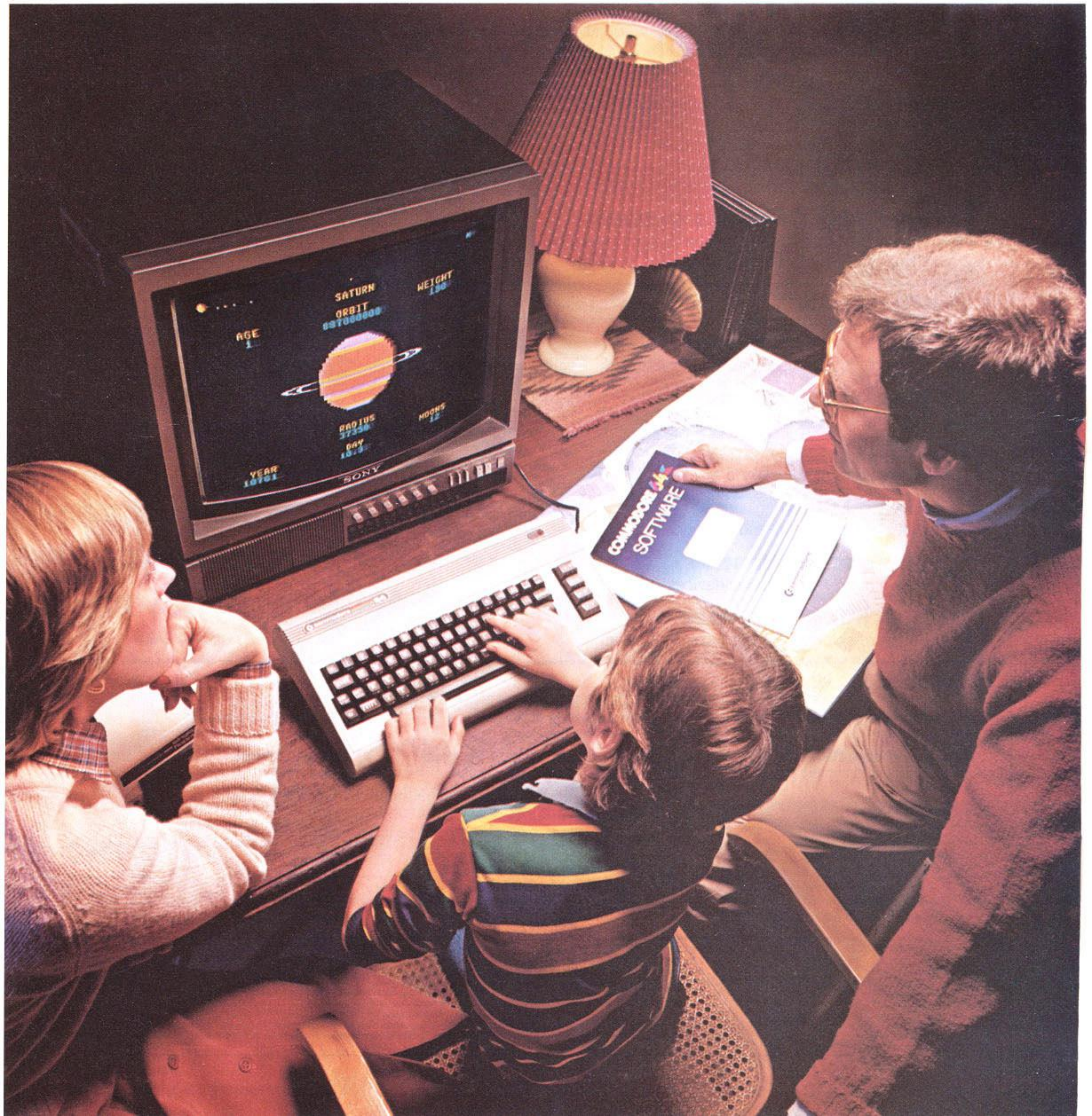
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Carnegie-Mellon Univ. may be first to make computers mandatory.

Computers reshape work habits at college

The University of Illinois in Urbana-Champaign, for example, has established 46 computer centers where students can go to do

For Home and School—We've just released numerous educational software programs into the public domain. These programs, written by educators, include courses in Business, Computer Science, English, French, Geography, History, Mathematics. The list goes on and on.

We're also working with major educational publishers to develop new software. For example, a significant portion of the well-regarded MECC courseware has been completely adapted for the Commodore 64. The Edufun™ series from Milliken will be available for home and school use in the near future, and over thirty early learning programs from Midwest Software will help children master the basics.

In addition, we've developed a complete set of software tools to make our educational computers even more useful. Take Logo and PILOT, for example. These popular languages have been completely adapted for the Commodore 64.

Our Educational Resource Centers, 250 strong, continue to provide teacher support in computer use in the classroom, and the number is growing!

COMMODORE'S COMMITMENT & APPROACH BECOMES STRONGER AS THE DOLLARS GET TIGHTER.

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FROM THE EDITOR

Dreams Do Come True

It started with a dream.

"Wouldn't it be great to have a full-fledged computer center?" one teacher remarked in the Kenwood School lounge.

"Dream on," a second teacher responded.

"No, wait. Why should a computer center be just a dream?" a third teacher interjected.

Wheels began to turn. By that afternoon six teachers in the Bend, Oregon, elementary school had devised a plan that would collect $25,000—enough for a fully equipped computer center.

Teacher Lane Weiss, one of the original teacher's lounge dreamers, tells how he and his comrades accomplished the feat.

" We organized a fund-raiser called **Triathlon**," Lane says. "It consisted of three money-raising events: a math-a-thon, a read-a-thon, and a jog-a-thon.

Each student in the school chose an event and asked friends and relatives to pledge money for each math problem they solved, each page they read, or each mile they jogged during a certain period."

Kenwood teachers monitored all events.

"Both the kids and the teachers were true champions! What we thought would take three years to raise, we raised in a matter of weeks," Lane says. For more on Lane's story, turn to page 20.

Writing instruction has been a top priority in many schools during the last few years. And *writely* so! Good writing instruction develops good thinking skills.

In **Write Your Own Adventure Stories**, page 24, teacher Craig Dickinson uses the computer to teach kids how to write well-crafted adventure stories that actually allow the reader to participate in the adventure. Seven-foot, 11,000-pound Weelywockers, slimy green snakes, and knights in shining armor are just some of the exciting characters Craig's students have met firsthand.

Don't miss the second part of Dave Kirchner's lessons on graphics, page 30. This month Dave shows us **Five Easy Graphics to Make.** The designs are easy, yet attractive.

Speaking of attractive designs, how's your computer center looking these days? If it's got decor galore, be sure to enter *Teaching and Computers'* **Beautiful Computer Centers Contest**. You could win $200! Turn to page 64 for details.

By now you've gotten a good look at *T & C*'s staff. Yes, that's us in the photo below. If the looks on our faces seem happy, well, they are. We're thinking about the great material we have planned for issues to come! ■

Mary Dalheim
Editor

When it comes to teaching with computers, the sky's the limit say T & C staffers. Top row: Wendy Caron, Dale Moyer, Eve Sennett, Mary Dalheim. Bottom row: Leah Dilworth, Lesli Rotenberg, Lorri Hopping.

TEACHING and computers

PUBLISHED BY SCHOLASTIC INC.

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EASTERN U.S. SALES MANAGER: Paul Rothkopf
NEW YORK OFFICE: 730 Broadway, New York, NY 10003
MIDWEST MANAGER: Ray Barnes
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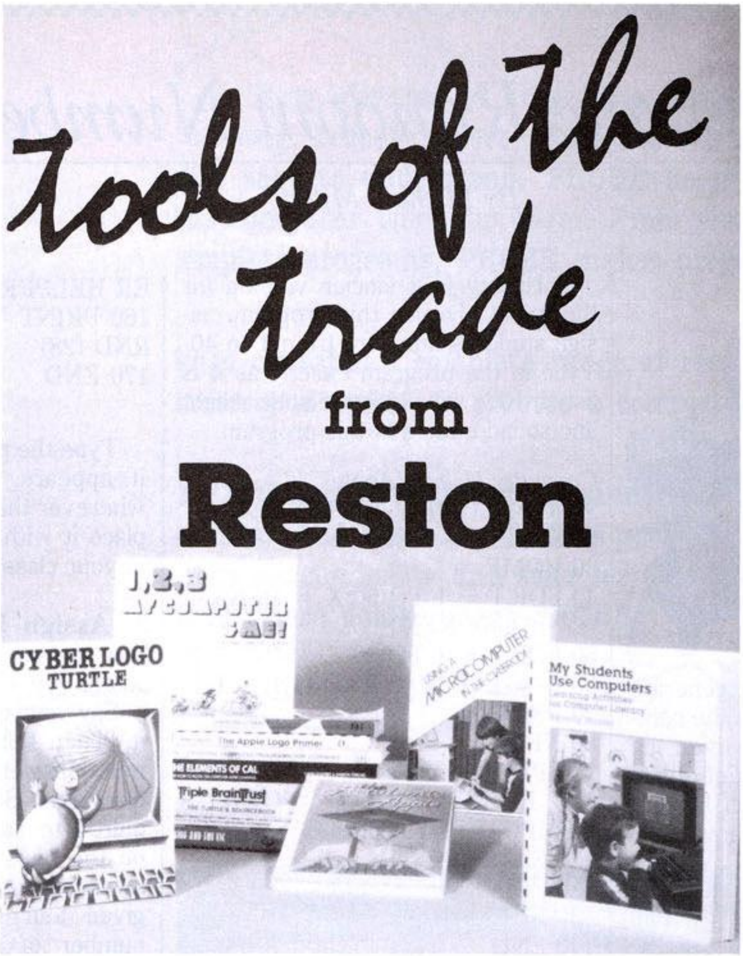

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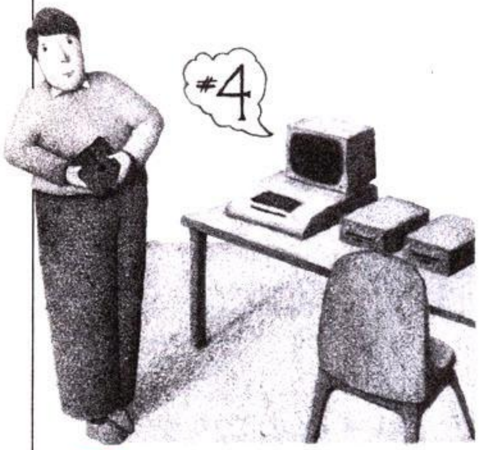
IDEA OF THE MONTH

Generate Random Numbers

By Michael Milone



Simple programs that generate a random number on the computer screen can liven up some routine procedures such as assigning classroom helpers and giving quizzes. Here's how:

1. Select a Computer Helper. The program below displays a random number on the monitor. You can use this program each day to appoint a computer helper.

First, assign each student a number, starting with *one* and ending with the number of students in your class.

Run the program. The student whose number is randomly chosen by the computer becomes the computer helper for the day. That means the student keeps the computer area neat and clean and helps others with the day's computer assignments.

If the same student is chosen twice in a row, simply run the program again to find a computer helper.

Type the program listing exactly as listed, with one exception—when you come to the number *28* in line 40, replace it with the number of children in your classroom.

The program is for Commodore machines only.

Computer Helper (Commodore)

```
10 REM COMPUTER HELPER
20 PRINT "TODAY'S COMPUTER HELPER IS..."
30 PRINT
40 PRINT "STUDENT NUMBER" INT (28 * RND (0) + 1)
50 END
```

Following is a fancier version for the Apple. To use this program, assign students numbers from 1 to 40. Type in the program exactly as it is listed. Kids will enjoy the special light and sound effects in this program.

Computer Helper (Apple)

```
10 REM COMPUTER HELPER
20 SPEED = 100
30 HOME
40 FOR I = 1 TO 50:X = PEEK ( − 16336): NEXT
50 FOR I = 1 TO 20
60 A = INT (40 * RND (1)) + 1
70 PRINT A
80 NEXT
90 SPEED = 250
100 PRINT: PRINT "TODAY'S COMPUTER HELPER IS"
110 FLASH
120 PRINT A
130 NORMAL
140 END
```

If you'd like to assign a whole week's worth of computer helpers at one time, the following Radio Shack program will let you do that.

Weekly Helpers (Radio Shack)

```
10 REM WEEKLY COMPUTER HELPERS
20 RANDOM
30 PRINT "MONDAY'S COMPUTER HELPER IS..."
40 PRINT "STUDENT NUMBER" RND (28)
50 PRINT
60 PRINT "TUESDAY'S COMPUTER HELPER IS..."
70 PRINT "STUDENT NUMBER" RND (28)
80 PRINT
90 PRINT "WEDNESDAY'S COMPUTER HELPER IS..."
100 PRINT "STUDENT NUMBER" RND (28)
110 PRINT
120 PRINT "THURSDAY'S COMPUTER HELPER IS..."
130 PRINT "STUDENT NUMBER" RND (28)
140 PRINT
150 PRINT "FRIDAY'S COMPUTER HELPER IS..."
160 PRINT "STUDENT NUMBER" RND (28)
170 END
```

Type the program listing exactly as it appears, with one exception—wherever the number *28* appears, replace it with the number of students in your class.

2. Assign Pop Quiz Questions. You can use the next program just before you administer a pop quiz.

Say your quiz has five questions on it. Then tell students each of them must answer from one to five of the questions. Some students will be required to answer only one question on the quiz; others will have to answer two or three. Still others will be given four or five questions. The number of questions a child must answer will depend on the number that appears on the screen when he or she runs the following Atari program.

Type the program exactly as it is listed. In this program the computer calls students by name.

Question Determiner (Atari)

```
10 REM QUESTION DETERMINER
20 DIM B$(20)
30 PRINT "HOW MANY STUDENTS ARE THERE?"
40 INPUT N
50 FOR X = 1 TO N
60 PRINT "WHAT IS YOUR NAME?"
70 INPUT B$
80 PRINT
90 PRINT B$;" GETS ";INT (5* RND(1)) + 1;" QUESTIONS."
100 PRINT
110 PRINT
120 NEXT
130 END
```

Michael Milone is editor of Skillcorp Publishers in Honesdale, PA.

PAUL YALOWITZ

Soon every-body will plot, list, bug, debug, loop, and load.

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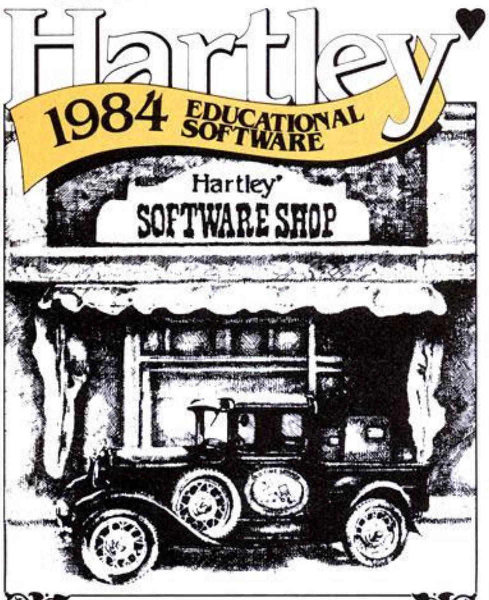

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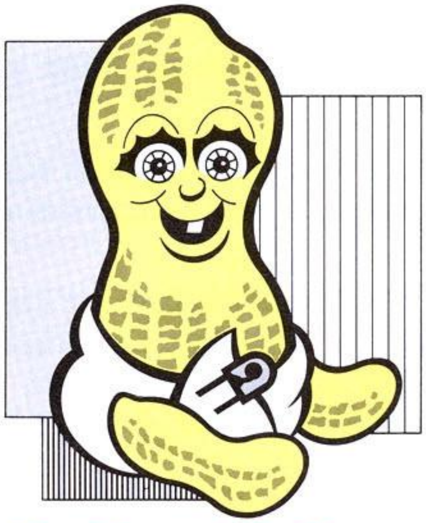
UPDATE

News For Computer-Using Teachers



BILL SILBERT

The "Peanut" Is Born

International Business Machines Corporation (IBM) has unveiled its long awaited PCjr. Known as the "Peanut" during its developmental stages, the machine marks IBM's entry into the home computer market.

The $669 computer comes with 64K of memory and two slots for cartridges. It hooks up to a television or video monitor. An enhanced version, which will cost $1,269, will have 128K of memory and a disk drive. Because the keyboard communicates with the computer by remote control, the user can operate it from 20 feet away.

Texas Instruments Pulls Out of Home Computer Market

Due to continuing heavy losses, Texas Instruments Inc. pulled out of the home computer business, ceasing the production of its 99/4A computer. A spokesman for Texas Instruments said that the company will provide both in-warranty and out-of-warranty service for the 99/4A computer indefinitely. He also said that the company will continue to produce software for the home computer, at least until the end of the year.

Computer EdGame Challenge

Want an opportunity to produce your your own educational game? Classes, individual students, teachers, and professionals can enter original games in the second annual Computer EdGame Challenge sponsored by Verbatim Corporation in cooperation with Scholastic Inc. Entries may be submitted in six curricular categories in both elementary and secondary divisions, including Math, Language Arts, Health/Nutrition, Sciences, Geography/Social Studies, and Miscellaneous, and may be designed for most major microcomputer brands. Judging will be based on originality, educational merit, and entertainment value. Winning games will be offered to the general public on a nonprofit basis, with royalties going to the authors. The entry deadline is April 30, 1984. For more information, contact Computer EdGame Challenge, Scholastic Inc., 730 Broadway, New York, NY 10003; 212/505-3485.

Schools Get Discounts on Apple Products

Schools can now purchase Apple products at 30 percent off the suggested retail prices. Plus, for every five identical computer products purchased, schools will get a sixth one free.

Called "Investment in Education," the program is available to all U.S. public and private schools from elementary through college levels until February 28. The program covers most Apple products, except the Lisa computer and software. Systems such as the Apple IIe Starter System and special promotional packages are available at the discounted price, but are not included in the six-for-five offer.

Free Computer Film

A 16mm film called "This Business of Numbers," is available on free loan to elementary schools from Sperry-Univac. The film uses animated cartoons to describe the development of numbers from the caveman to modern data processing. Contact Karol Media, 625 From Rd., Paramus, NJ 07652.

UPDATE

Computer Course on Television

A 12-week television program called "The Academy on Computers" will provide audience-participative computer training over 10 PBS stations beginning this month. The course teaches how to operate a microcomputer, write programs, and evaluate software.

Viewers who pay a $70 registration fee receive instruction manuals, a newsletter, software, and personal assistance via a hotline. The program will premiere on PBS stations in Kentucky, Nebraska, Los Angeles (CA), San Diego (CA), Buffalo (NY), New York (NY), Rochester (NY), Schenectady (NY), Toledo (OH), and Madison (WI). It is scheduled for a second run in other cities. Check with your local PBS station for registration and broadcast information.

Apple Computer Club Competition

Elementary and secondary school computer clubs and individual students can compete for travel, cash, and computer equipment prizes in a national contest. You don't have to own an Apple computer or be in an Apple Computer Club to enter. Contestants are encouraged to use microcomputers in a project that serves the community, but any project that involves microcomputers will be accepted. Contestants may enter as individuals or clubs from elementary and secondary schools. Judging will be based on creativity, originality, usefulness of application, community and educational value, and completeness and neatness of entry. Finalists will be flown to Washington (DC) in May for a five-day stay. During that time the winners will be announced. Prizes range from $100, for semifinalists, to $20,000 worth of computer equipment for winning clubs. Entries are due March 1. For entry forms and information, contact Apple Computer Club Competition, 217 Jackson Street, Lowell, MA 01852. ■

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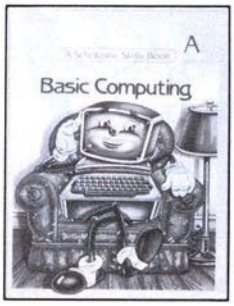

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QUESTION CORNER

By Molly Watt

BILL SILBERT

Learning How Turtles Talk

Dear Molly: When my principal evaluated my teaching this year, he suggested that I take a Logo course. I've been learning Logo in my classroom right along with my kids. I think that's the ideal way to learn it. Do you agree?

Karen Woolf
Hamilton, MA

I think it's great that you learn Logo with your kids. But your principal has a valid point, too. If you are teaching Logo, it is important to participate in a Logo culture, whether you take a course, attend a workshop, or belong to a user group. This experience is as valuable as a French teacher spending time in France. It allows you to "speak" Logo with a wider community than your own elementary school students. And it gives you a chance to share ideas, programs, and debugging strategies with colleagues. Besides programming, most classes and workshops discuss implementation and ethical issues. These are topics you can't discuss with your students! □

Laboratory Specimen

Dear Molly: The PTA in my school is purchasing 15 computers to put in a lab. I've been learning to write programs in BASIC and coming up with ideas for teaching programming in class. Now it seems I will just send my students to the lab and the school librarian will be the computer teacher. I'm so disappointed!

David Joel
Little Rock, AR

Don't be disappointed. There are lots of ways you can get involved with computers at your school.

Start by participating in the decision-making process. Suggest that each computer have its own rolling table so that teachers can easily move computers into their classrooms. Then schedule a specific time each week when teachers can use the computers in class.

Another way you can get involved is to work with the lab teacher when your class is in the lab. Two heads are better than one when it comes to teaching with computers. Perhaps you can request some private time in the lab with your class, too. That way you can teach programming principles during class, and give the students hands-on computer time in the lab. □

Byting the Dust

Dear Molly: The computer in my classroom is gathering dust. I never get a chance to use it because there just isn't enough time in the school day. How do other teachers find time to use their computers?

Rosalie Cohen
Newark, NJ

Fitting the computer into your busy schedule requires planning and patience. Start by thinking about small periods of time and small goals. Schedule 20-minute periods each day for independent work like silent reading, journal writing, or spelling practice. Then use that time to work with one student at the computer.

After you get used to scheduling 20 minutes per day, try extending it another 20 minutes by having the student you worked with teach a classmate. At this rate, the computer will soon become a regular part of your school day. □

The Horrors of Hunt and Peck

Dear Molly: I'm worried because my students are learning to use the computer keyboard without learning to type first. Should kids learn touch typing before they use the computer?

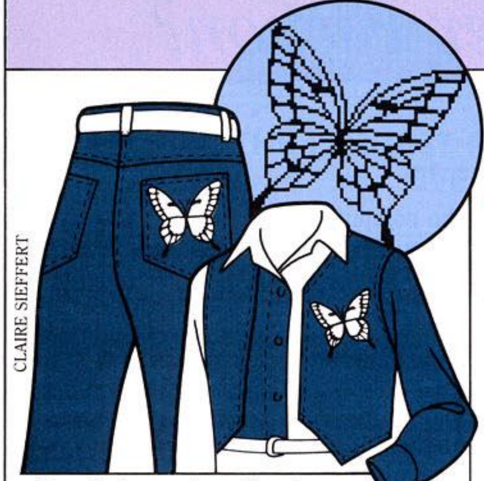
Carmen Fredman
Peoria, IL

It is important to think of the computer as an educational tool and not a typing machine. We should not restrict computer use to people who can touch type. That would be like not allowing children to express their ideas in written form until they can handle a pen gracefully. The hands of very young children are neither large enough nor strong enough to touch type. Yet these children can benefit from using a microcomputer.

If your children are old enough to touch type (some people believe that by fourth or fifth grade a student can learn to type), introduce them to a typing tutor program. Then place it next to the computer so students can practice when they have free time.

Master Type is one of the most popular typing programs with children, but it is also one of the most controversial with teachers because of its arcade game format. Players shoot down missiles attempting to invade their planet by typing words, ranging from one to nine letters. Another typing program is *Typing Tutor.* In this program, students copy letters or paragraphs that appear on the screen. The program monitors speed and accuracy. □

QUESTION CORNER



CLAIRE SIEFFERT

Logo looks great on blue jeans.

Art Tech-nique

Dear Molly: I'm an art teacher. How can I use computers with my students?

Lauren Davis
Chesterfield, MO

I recommend a program called *Magic Crayon* for young children. It teaches children about programming while they draw pictures on the screen. Children can select different colors, save their pictures, have the computer retrieve their saved pictures, and erase any they don't like.

Paint is another good program for art classes. It allows children to create a design by moving the cursor with either a joystick or the keyboard. Artists dip into paint pots on the bottom of the screen to change color, texture, hue, or brightness. A book that comes with the software package includes chapters on computer artists, how computers work, and the history of art from caves to computers.

I also recommend *The Koala Pad* touch tablet for making graphs, designs, and pictures. It's a handheld electronic pad that plugs into your microcomputer and lets you produce drawings on the screen by moving your finger or a stylus across the pad.

Finally, I suggest that you use programming languages like BASIC, PILOT, or Logo to make graphics-related projects. The possiblities for creativity are endless here. I had a student who used her Logo designs as a pattern for embroidering on denim clothes. □

Software Info:

Master Type
Hardware: Atari, Commodore 64, IBM, Apple
Price: $39.95; $49.95 for IBM
Contact: Lightning Software, P.O. Box 11725, Palo Alto, CA 94306.

Typing Tutor
Hardware: Apple
Grade Level: Grade 2-6
Price: $24.95
Contact: Microsoft Corp., 10700 Northup Way, Bellevue, WA 98004; 206/828-8080.

Magic Crayon
Hardware: Apple II, II Plus, IIe (48K)
Grade Level: Preschool-Grade 4
Price: $35
Contact: C & C Software, 5713 Kentfield Circle, Wichita, KS 67220; 316/683-6056.

Paint
Hardware: Atari 800 (48K); joystick
Grade Level: K-Grade 6
Price: $39.95
Contact: Reston Publishing Company, Inc., 11480 Sunset Hills Rd., Reston, VA 22090; 703/437-8900.

Koala Pad
Hardware: Apple, Atari, IBM, Commodore
Grade Level: K-Adult
Price: $125
Contact: Koala Technologies Corp., 1800 Embarcadero Rd., Palo Alto, CA 94303; 415/494-2030. ■

Do you have a computer question? Send it to Teaching and Computers' *expert, Molly Watt. Molly teaches computer education courses at Keene State College in Keene, New Hampshire. Write to her in care of* Teaching and Computers, *730 Broadway, New York, NY 10003.*

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BOOKSHELF

What's New in Computer Fiction?

By *Judy Simmons*

The nonfiction section of your computer library may be getting the most use these days, but that doesn't mean you should ignore computer fiction!

Fred D'Ignazio has written a delightful collection of computer capers called ***Chip Mitchell: The Case of the Stolen Computer Brains*** (E.P. Dutton; 1982; $8.69).

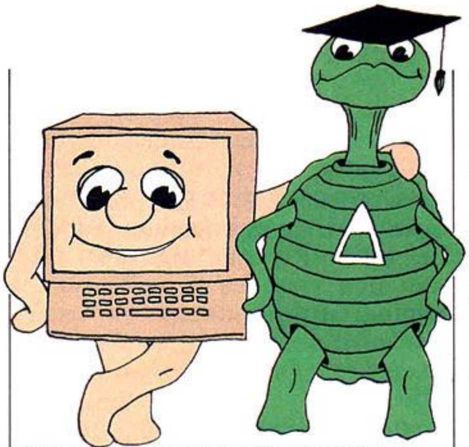
In the book, Charlie "Chip" Mitchell is a seventh-grade computer whiz who uses his computer prowess to solve 10 mysteries.

For example, in "The Case of the Killer Robot," Chip and his dad are visiting a computerized factory when one of the employees is discovered to be fatally injured, presumably by a killer robot. Chip uses logic and computers to discover the true identity of the guilty party.

Third or fourth grade science fiction fans will love William E. Butterworth's ***Next Stop, Earth*** (Walker and Company; 1978; $5.95).

In this short novel, 12-year-old Charley Wilson awakens to find that his space ship has been obstructed by a robot and is speeding back toward Earth, out of control. Charley finally manages to use the ship's computer to summon help.

Sixth graders should find Sonia Levitin's book ***The Mark of Conte*** (Atheneum; 1980; $8.95; hdbk.) interesting. The book is about Conte Mark, a student whose name also appears in the school computer as both Conte Mark and Mark Conte. The error allows Conte to assume a double identity and earn twice the credits in half the time! With a little clever scheming, ingenious scheduling, and covert computer manipulation, Conte manages to "leave his mark" on the school.



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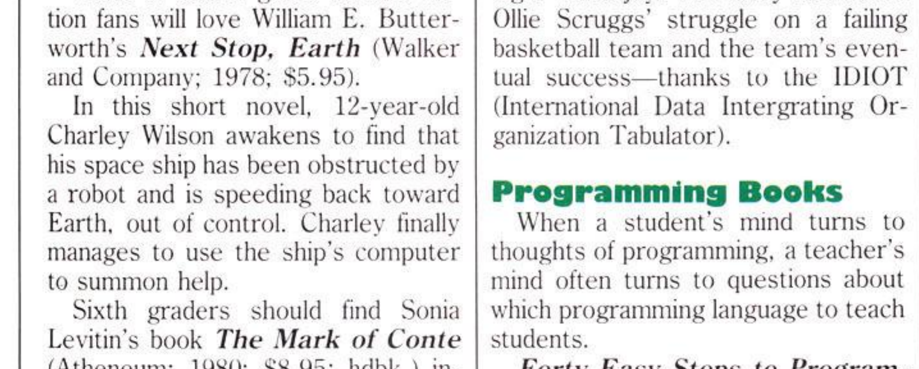
Ollie's Team and the Basketball Computer by Clem Philbrook (Hastings House; 1969; $5.95) is a typical sports story with a computer twist that readers in grades five to eight will enjoy. The story tells about Ollie Scruggs' struggle on a failing basketball team and the team's eventual success—thanks to the IDIOT (International Data Intergrating Organization Tabulator).

Programming Books

When a student's mind turns to thoughts of programming, a teacher's mind often turns to questions about which programming language to teach students.

Forty Easy Steps to Programming in BASIC and Logo by James L. Poirot and R. Clark Adams (Sterling Swift; 1983; $3.95) avoids the common Logo-versus-BASIC dilemma by introducing Apple users to both.

The first two parts of the book are devoted to Logo and the third to BASIC. In both cases, students work on the computer and, at the same time, follow short and simple instructions in the book. Items to be typed into the computer are shaded in gray.



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Two other Logo programming books are ***1,2,3 My Computer and Me: A Logo Funbook for Kids*** by Donna Bearden (Prentice-Hall; 1983; $10.95) and ***Logo: An Introduction*** by J. Dale Burnett (Creative Computing Press; 1982; $7.95). Bearden's book takes a workbook approach to teaching programming on the TI 99/4A and the Apple and is appropriate for elementary students. The book contains experiments and exercises for copying shapes and creating original graphics.

Burnett's book will work best with older students and teachers. The 66-page book covers arithmetic and list processing as well as the popular turtle graphics aspects of Logo.

In next month's column, I'll tell you about a book full of computer activities for grades K to 8 and more!

Publishers' Addresses

E. P. Dutton, 2 Park Ave., New York, NY 10010.

Hastings House, 10 E. 40th St., New York, NY 10016.

Walker & Co., 720 Fifth Ave., New York, NY 10019.

Atheneum, 597 Fifth Ave., New York, NY 10017.

Sterling Swift, 1600 Fortview Rd., Austin, TX 78704.

Prentice-Hall, Inc., Englewood Cliffs, NJ 07632.

Creative Computing Press, 51 Dumont Place, Morristown, NJ 07960.

Judy Simmons is a librarian at the Robert E. Lee Elementary School in Denton, TX.

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NOTE: Each student who decides to participate, will at that time, be required to join **SWIG** at the reduced student membership fee of $5 (up to grade 8) or $10 (grades 9 & up).

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CLASSROOM HAPPENINGS

By Lesli Rotenberg

Firefighter George Lucia introduces Red to children in New Jersey.

Preventing Fires and Winning Smiles

The children file into the auditorium to hear fire fighter George talk about fire prevention. As he talks, the toy fire hydrant beside him twitches and turns. Little by little, the children start to giggle.

"Hey, I'm talking about something serious," George says.

"But the fire hydrant moved," the kids yell out.

"Don't be silly. Fire hydrants can't move," George tells the children.

"Oh, yes, I can," says the red fire hydrant.

Temporarily dubbed Red, the fire hydrant is a remote control robot that talks, sings, dances, and captivates children. Red helps fire inspector George Lucia teach kids in Hillsdale, New Jersey, how to prevent fires at home.

Because it is operated by remote control, Red "knows" and "sees" the actions of the children. This makes Red very real to the children. A two-way radio allows Red to speak with the children through a concealed operator and ask them questions about fire prevention.

Red is used in conjunction with a program called Operation E.D.I.T.H. (Exit Drills In The Home). This is a family plan for fire safety and survival. Red teaches the children what to do in case of a fire emergency by singing a song called "Stop, drop, and roll." Then he instructs them to practice exit drills at home.

At the end of each presentation, Red invites the children to visit the firehouse on Sunday for a tour and some treats. They all come!

"My child would not stop talking about Red," parents tell George.

"We'll all sing 'Stop, drop, and roll' now," one mother said.

Now that the Hillsdale fire department has purchased Red, it plans to have a contest to let the children give it a new name. □

Computers on Wheels

What has four wheels, 10 micros, five teachers, and travels 1,000 miles each week to deliver computer instruction to rural classrooms? It's the Computer Experience Microvan, a microcomputer delivery service for elementary schools.

School districts in New Mexico, west Texas, and Kansas pay $150 per day for the van's services. It arrives early in the morning so its staff can set up the computers in selected classrooms. Two to four classes. of up to 30 students each, get instruction and hands-on computer time. They learn computer literacy and programming in Logo. After school, teachers and administrators explore the computers and preview software.

The Microvan delivered computer instruction to 3,105 elementary students and 437 teachers and administrators last year. It is subsidized by New Mexico State University, Texas Instruments, and the International Space Hall of Fame. □

A Computer Brunch For Dad

How do you get fathers and kids to school on a Saturday morning? Teachers in Ontario, New York, lured 450 people—children, fathers, and grandfathers—to school with a scrumptious menu of pancakes, sausage, and computers.

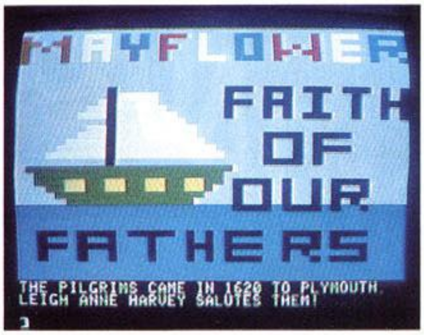
Fathers and grandfathers were invited to bring their home computers and demonstrate how they work. Later all of the guests experimented with educational games and software written by Ontario Primary School teachers. They learned how computers are used in different areas of the curriculum.

The brunch was a success! The Parent Advisory Group staff served more than 1,200 pancakes. Since the brunch, Ontario Primary got three new computers. With more computers and lots of interested dads, the school is planning an even bigger brunch soon. □

Let's Go America

My Country! 'Tis of Thee rings out as the Mayflower appears on the computer screen. This is Leigh Anne Harvey's graphic and musical salute to America.

Leigh Anne is a fourth grader at Edgeworth Elementary School in Sewickley, Pennsylvania. She and her classmates produced a computer slide show with the help of their teacher, Mim Bizic. The slides represent each child's vision of America.



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THE PILGRIMS CAME IN 1620 TO PLYMOUTH.
LEIGH ANNE HARVEY SALUTES THEM!
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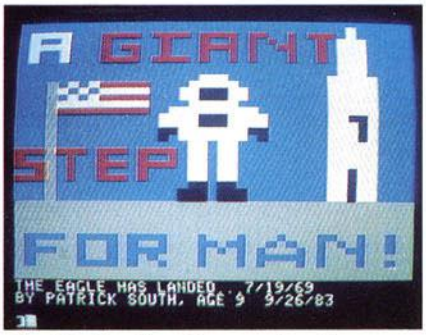
Leigh Anne Harvey's graphic design.

Patrick South, a nine-year-old student, calls his graphic design "The Eagle Has Landed." It is a picture of a space shuttle, an astronaut, and an American flag. Currently, Patrick is adding music to his design.



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THE EAGLE HAS LANDED   7/19/69
BY PATRICK SOUTH, AGE 9  9/26/83
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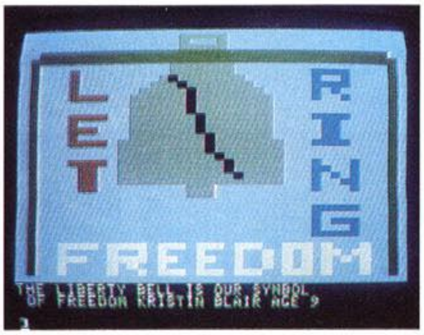
Patrick South's tribute to America.

Another student, Thuy Le, calls her design "For Purple Mountains Majesties." It is a colorful landscape made of pastel colors. The picture is accompanied by the song, "America."

The Liberty Bell, the Statue of Liberty, and Abe Lincoln are some of the subjects in the show. Mim plans to present the slide show to the children's parents at the next open house. □



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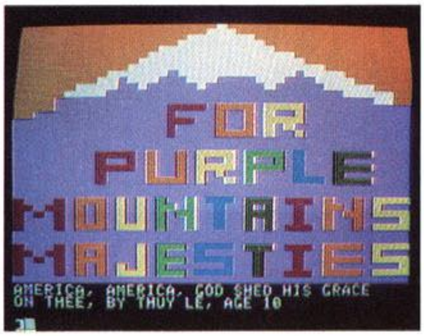
THE LIBERTY BELL IS OUR SYMBOL
 OF FREEDOM KRISTIN BLAIR AGE 9
```

The Liberty Bell by Kristin Blair.



```
AMERICA, AMERICA, GOD SHED HIS GRACE
ON THEE, BY THUY LE, AGE 10
```

Thuy Le's patriotic landscape.

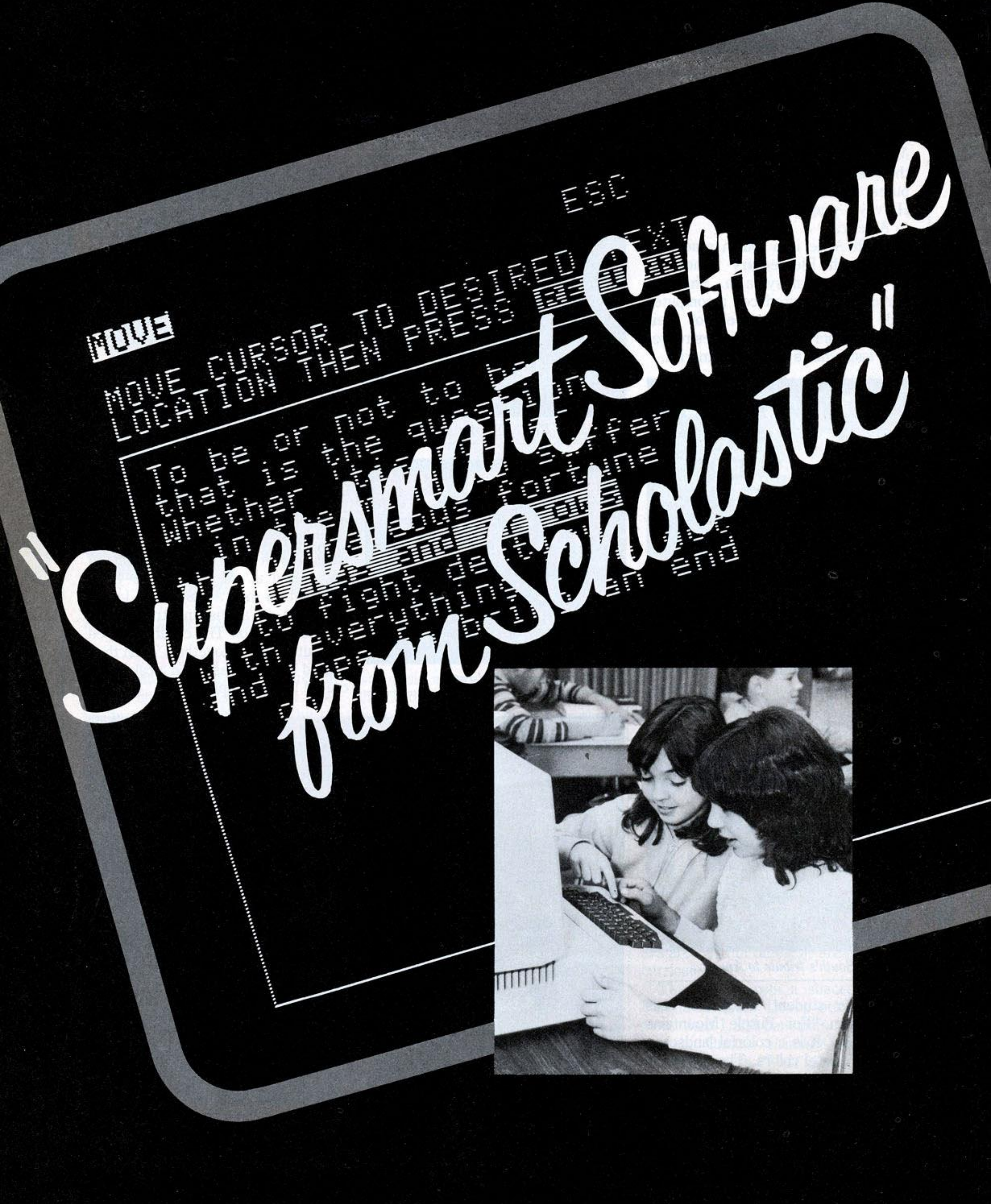
Close Encounters of a Special Kind

At 10 a.m. every day, three children at Magnolia School in El Cajon, California, gather around the computer to wait for messages from their handicapped computer pals at Sevick Center. The children send messages to each other by modem. They chatter about movies they have seen and their common interest in computers, says Judy Gwinnup, a teacher at Sevick Center.

The eight- to eleven-year-old students in her class each get at least one hour of hands-on computer time each week. Some of the children use pedal switches rigged up to the joy stick to operate the computer. Students who are too handicapped to type messages at the keyboard ask other children to type for them.

The kids become pretty good friends with their pen pals across town. And at the end of the year, they get to meet. Last year, Judy's class got on a bus and traveled to Magnolia School. The children played computer games together. Then they shared lunch, recess, and a cake decorated like a computer. ■

Children from the Sevick Center in California work at the computer.


"Supersmart Software from Scholastic"

```
MOVE                              ESC
MOVE CURSOR TO DESIRED TEXT
LOCATION THEN PRESS
To be or not to be
that is the question
whether            suffer
in              fortune
to fight de
with everything
                an end
```

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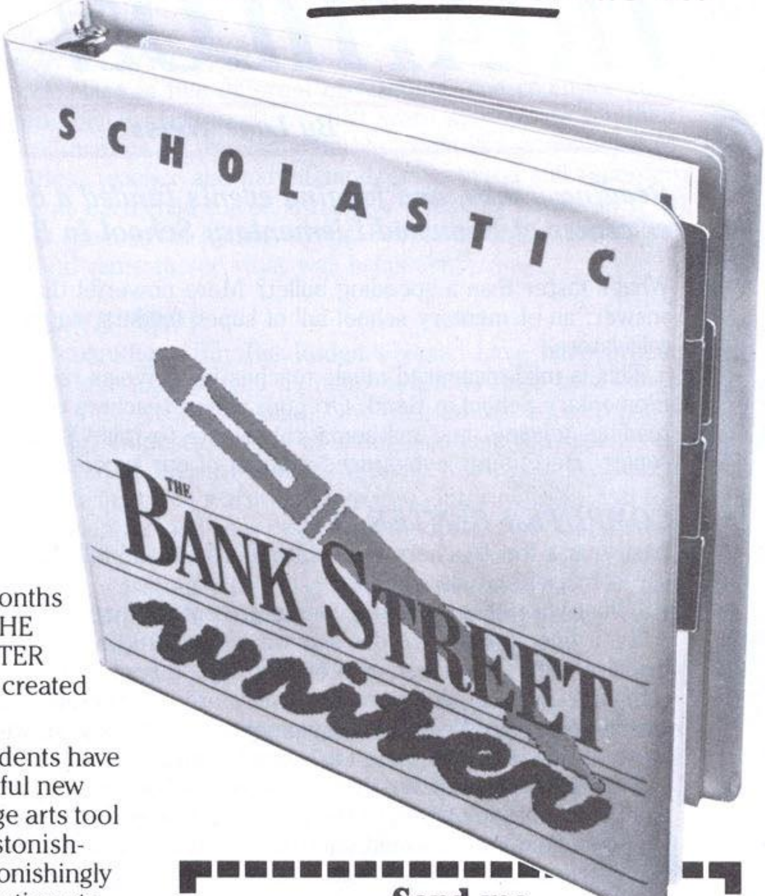

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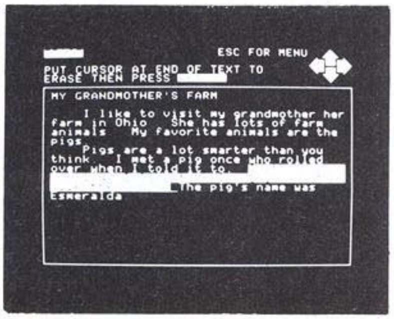

```
                    ESC FOR MENU
PUT CURSOR AT END OF TEXT TO
ERASE THEN PRESS
MY GRANDMOTHER'S FARM
     I like to visit my grandmother her
farm in Ohio   She has lots of farm
animals   My favorite animals are the
pigs
     Pigs are a lot smarter than you
think   I met a pig once who rolled
over when I told it to
                      The pig's name was
Esmeralda
```

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A SUPER FUND RAISER

THE $25,000 TRIATHLON

By Lane Weiss

Reading, math, and jogging events funded a complete computer center at Kenwood Elementary School in Bend, Oregon.

What's faster than a speeding bullet? More powerful than a locomotive? The answer: an elementary school full of super readers, super joggers, and super calculators.

This is mild-mannered music teacher Lane Weiss reporting from Kenwood Elementary School in Bend, Oregon, where teachers and students used their reading, jogging, and mathematical talents to raise $25,000 for a computer center. Here is my eyewitness account of our success.

A superjogger completes another lap.

COMPUTER CENTER, INC.

Last year a few teachers were sitting around and talking about how we might use computers at our school.

"What we really need is a computer center," one teacher said.

Everyone agreed. We decided we needed 16 microcomputers, 10 carts to mobilize them, and three printers for a good center. We'd also need a music computer system, software for every area of the curriculum, and teacher training courses. We had no equipment to start with, so when we totaled the costs of this plan, the price tag came to (gulp) $25,000!

That didn't stop us. We decided to form a nonprofit organization to raise the money. We called ourselves the Kenwood Computer Center or KC^2 for short. We estimated that it would take three years to finance the project. Our idea for an opening fund-raiser was a triathlon, a contest with three events.

THE RULES OF THE GAME

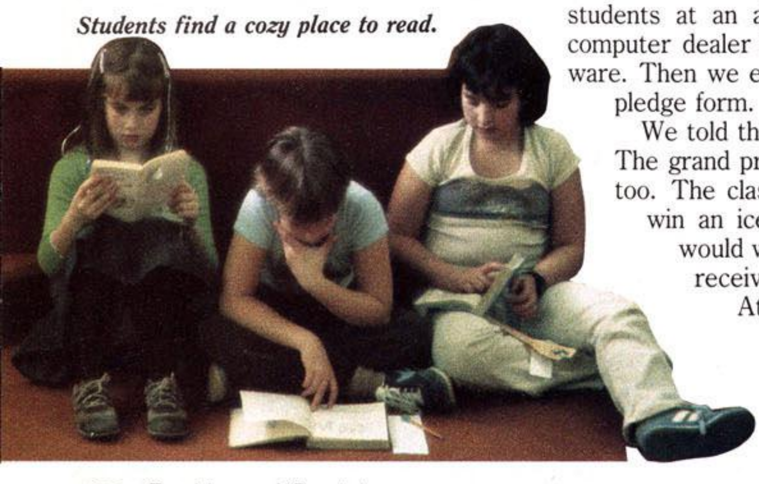
The triathlon's three events would be a math-a-thon, a read-a-thon, and a jog-a-thon. Each student would choose one event to participate in, asking close friends and relatives to pledge money for each math problem solved correctly, each page read, and each mile jogged within a given time period. The events would take place every day during our 30-minute lunch recess for five consecutive days.

First, we presented the idea to the Kenwood School staff. The teachers were behind it 100 percent, so three days later we presented the plan to students at an all-school assembly. To whet the kids' appetites, a local computer dealer brought in a computer and demonstrated some math software. Then we explained how the triathlon would work and how to fill out a pledge form.

We told the students that everyone would win if we reached our goal. The grand prize was the computer center. But there were other prizes, too. The class in each grade level that earned the most money would win an ice cream party. The top money earner in each classroom would win a KC^2 T-shirt. And the top money earner in school would receive a dirt bike similar to the one seen in the movie, *E.T.*

At the end of the assembly, two T-shirts were presented to students in each grade level whose names were picked from a hat. This really motivated the rest of the kids. Then we gave students pledge sheets and told them they had a week and a half to collect pledges.

Students find a cozy place to read.



Pledges all secured, the triathlon week worked like digital clockwork. A parent representative in the KC^2 successfully recruited other parents to help teachers run and monitor each event. Every day, at lunch recess, a warning bell rang to tell students to go to their respective events. Teachers couldn't believe how fast the kids ran to get to their event.

COMPUTING FOR COMPUTERS

The math-a-thon took place in five different classrooms, one room for each grade level. Children solved math problems that were appropriate for their level. They solved as many math problems as they could in five minutes. At the end of five minutes, teacher and parent monitors counted and recorded the number of problems each child solved correctly. Then all the kids lined up around the school and cheered the joggers along. People driving by the school saw the commotion and came to see what was happening.

MILES FOR THE MEMORY

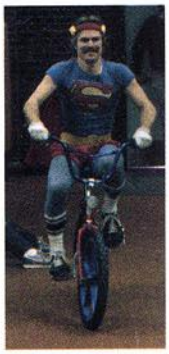
It wasn't the Boston marathon. But Bill Rodgers would have been proud. Students of all shapes and sizes jogged as many times as their gym shoes would take them around the school building. One time around equaled half a mile. To avoid trampling, students started in shifts according to grade level. They were advised to run at their own pace. Walking was OK, too. Before the race, everyone participated in warm-up exercises. Jumping jacks and toe touches were accompanied by loud cheers: "Chips for Kids" and "Computers for Kenwood."

The leader of the pack was yours truly. I ran three miles each day. Several kids kept up with me and totaled 15 miles at the end of the week. We all agreed that we had never felt better.

INPUT LITERATURE

The school library was the setting for the reading competition. Teachers from each grade level selected appropriate reading material for their students. Then kids chose their own books. The only requirement was that students pick a book they had not read in the past. At the end of each day, monitors counted and recorded the number of pages each child read. Teachers were amazed at the strange places kids found to curl up and read their books. There was a body and a book in every nook of the Kenwood library. According to the librarians, the library was never as quiet as it was during those 30 minutes each day of Triathlon Week.

IT'S A BIRD, IT'S A PLANE, IT'S . . . .



On the last day of Triathlon Week, students in every event were surprised to see Superman riding on the coveted dirt bike. He did not leap tall buildings in a single bound, but he did drive through the library, the math classrooms, and around the triathlon track, congratulating kids on a job well done and reminding them to collect pledges. (According to some students, Superman bore uncanny resemblance to Kenwood's mild-mannered music teacher.)

For the next week, students collected their pledged money. Proud children approached aunts, cousins, sisters, and neighbors with impressive numbers of calculations completed, pages read, and miles jogged.

This caused a few problems for some miscalculating victims. One Dad pledged $5 per page, estimating that his

(continued)

T-shirts were presented to students.

The top money earners won dirt bikes.

Superman leads a pack of student joggers around the school building.

Triathlon *(continued from page 21)*

child could read about two pages a day. But Dad was a little surprised when Tommy revealed the total number of pages he read: 60 pages multiplied by $5 equals $300. We told kids not to demand the full amount. But this Dad sent the full $300 with a note that read, "I believe in what you are doing."

A similar surprise awaited the KC^2 teachers when they added up the pledge money. Our surprised expressions were rivaled only by that of the bank teller when we announced a deposit of $12,600!

DOUBLE DOUBLE SUCCESS SUCCESS

Now having established credibility, we met with several local businesses. Impressed with our commitment, organization, and progress, the Bend Foundation, a branch of a private corporation based in Bend, granted the remaining amount to reach our $25,000 goal. That meant we had reached our goal in just a few months. (And we thought it would take three years!)

AND THE WINNERS ARE . . . .

To present prizes, we held another all-school assembly. The grand prize, a computer lab, a music computer, and a computer program that guaranteed hands-on computer time for students and teacher training for faculty, went to everyone at Kenwood School.

We also announced that two students tied in the top money-earner category. We called forward the students who had each earned $360. We told them that we would divide the bike in half. We would give each

child a wheel, a handlebar, and so on. The children's expressions turned somber. Then Superman rode in on a second dirt bike. Smiles spread across the winners' faces. It was a dramatic finale!

PASTA CON GRATITUDE

But the celebration had only just begun. We had many people to thank for our victory. So we put on our aprons and broke out the pasta. First we served a spaghetti lunch to the teachers and staff at Kenwood to thank them for their support and cooperation. Then we served a spaghetti dinner to the school board, school district administration, private foundation fund grantors, and parent helpers. After this dinner, Kenwood students demonstrated computers to the crowd. Then we provided a hands-on training session for all of our guests.

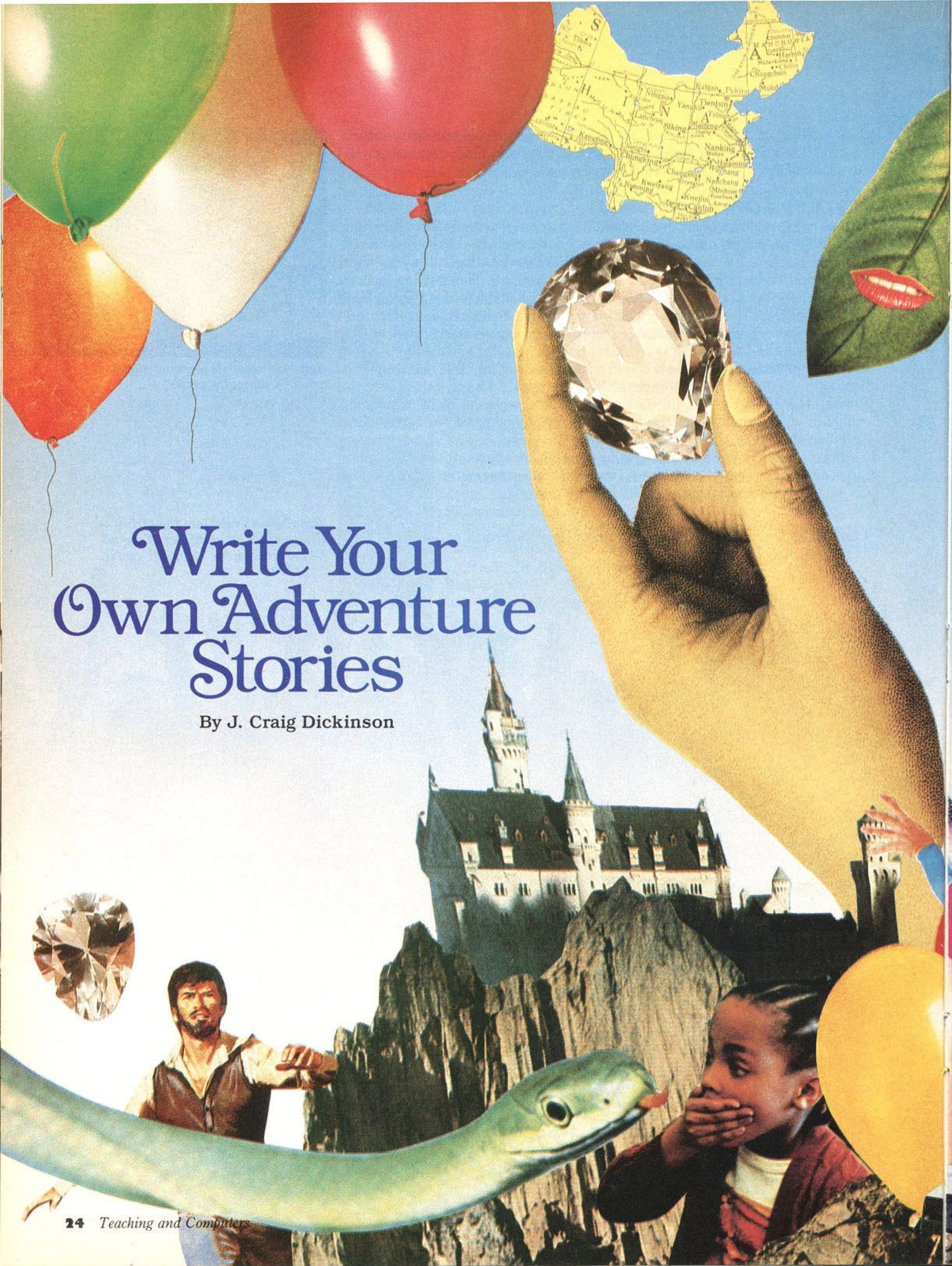
That completes our recipe for successful fund raising. But the Kenwood Computer Center project continues to grow and promote other success stories. The lab is the site for a community night, a parent night, a summer computer camp, and district teacher training. And our project was a catalyst for other elementary school computer projects.

I hope our story will help you in your fund-raising efforts, too. Just slip into the nearest phone booth and change into your Superman outfit. Then nothing can stop you from reaching your goal! ■

Kenwood students working at the school's computer center.

Lane Weiss is a music teacher and part-time Superman at Kenwood Elementary School in Bend, Oregon.

The students celebrate the arrival of Kenwood's first computer. They all helped finance the computer center.



Write Your Own Adventure Stories

By J. Craig Dickinson

Here's how teacher Craig Dickinson uses the computer to teach story writing.

I was grading one of my student's assignments, when suddenly, the lights went out. I felt myself falling, falling. . . . Boom! I landed at the bottom of a deep, dark dungeon. As I pulled myself up, I heard footsteps behind me. I couldn't see who it was, but I knew it was either the vengeful Gremulous, who sought the deed to my horse farm, or my friend Jim, who had a map of the dungeon. I could either flee through a door to my left or stand and wait. What would be my choice?

In either case, I knew I was in for a real treat, because I happened to be reading an *interactive adventure* story, written by a very imaginative student.

An *interactive* adventure story is one in which the reader becomes the central character. The reader/adventurer/hero makes choices that determine the course of events and, ultimately, the type of story ending.

If, for example, I chose to stay and wait in the deep, dark dungeon, I might have encountered Gremulous and had to do battle. Or I could have met up with my friend Jim and found a passage out of the dungeon. The consequences are left to the whims of the programmer.

Teaching children to write and program an interactive adventure story is not as hard as you might think. First, you must teach students the basics of writing a good story: how to create good plot, setting, and characterization; and how to organize all those components into a good tale.

Then you need to show kids how to "translate," or program, the story into BASIC using PRINT, INPUT, and GOTO commands.

What follows is the step-by-step plan I use to teach my upper elementary course in writing adventure stories. Because we use TRS-80 Model III computers, the students' program samples are written in Level II BASIC.

Step 1 Teach Students About Plot

The *plot* of a story is its basic outline of events—what happens when, and to whom. Good adventure plots contain *intrigue*—secret, sometimes evil, scheming by the characters to reach a goal, such as taking over the world with a spell that turns flesh into stone, or recovering lost treasure.

An interactive adventure story has multiple plots. That means many different events can take place, but not at the same time. Each plot or event of the story leads the hero in a different direction.

A good example of a story with multiple plots and intrigue is *The Dandee Diamond Mystery*, a book from Scholastic Inc.'s Pick-A-Path series of adventures. In the story, rich Uncle Herbert has died and left his priceless diamond to the first of four relatives who can uncover all the clues in his will. The reader becomes Uncle Herbert's nephew and has to choose between following drippy cousin Roderick, Captain Jack Scull, or Drusilla Devine (a young actress who married Uncle Herbert for his money), in search of the diamond.

(continued on page 26)

JOAN HALL

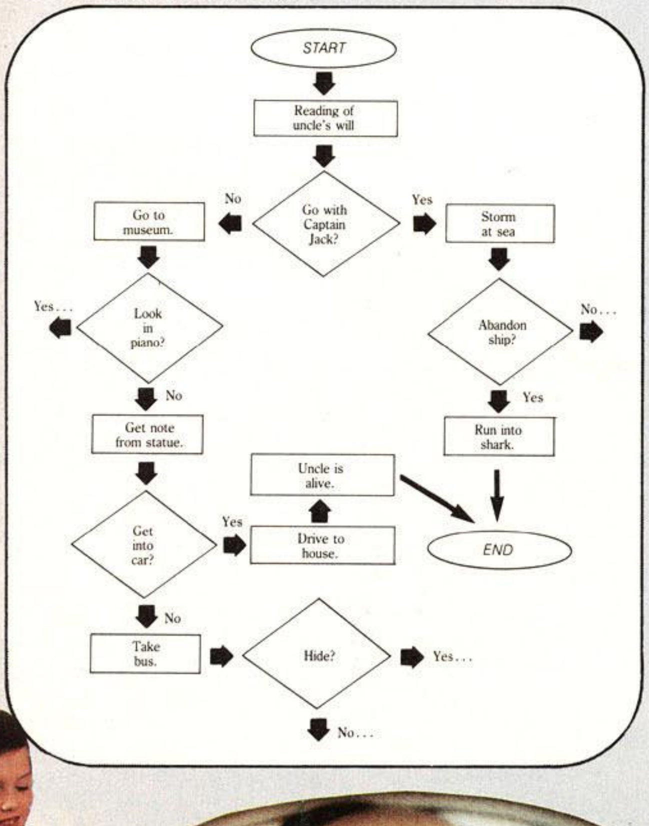
(continued from page 25)

Whatever choices the reader makes in the adventure, he or she is in for a great chase that might lead to China, to a deserted island, a parakeet's cage, and so on.

Activity: Have students read a multiple-plot adventure such as one from Bantam Book's Choose Your Own Adventure or Scholastic Inc.'s Pick-a-Path series.

Once students have read through all the different endings, have them draw a simple flowchart of the story. I tell my students to keep words to a minimum so that the flowchart is clear and easy to read. They should mark the points where the reader makes a decision with diamonds and the points of action or description with rectangles. They should indicate the beginning and endings of the flowchart with ovals. (For introductory flowcharting activities, see Learning Center, page 34.)

Here is a partial flowchart for the beginning of *The Dandee Diamond Mystery.*



Step 2 Teach Setting and Scenario

Once students understand how multiple-plot adventure stories work, they can start thinking about their own story. First they need to create a *setting.* A setting has at least three elements: time, place, and tone or atmosphere.

My students' adventure stories range in time from prehistoric to the year 3000 A.D.; in place from fantasy worlds filled with strange creatures to the cold, regimented walls of the Pentagon; and in tone from desolate and reflective to action-packed.

Activity: Ask students to jot down a list of possible settings for a story. Then have students choose their favorite to use in developing a *scenario.*

A scenario is a written description or outline of the plot. I tell my students that the best scenarios are those in which the reader is immediately involved and that there is a goal to achieve, such as getting out of a haunted house alive. Effective scenarios often include inanimate obstacles, such as locked doors or raging rivers.

Here are two scenarios written by my sixth graders.

"As you stand gazing, your leg resting upon a rock, you wonder how times were in days of civilization and big cities. Wyoming was at one time a hot area. It is now desolate, barren, and made up of frozen plains as far as I can see."

"In the morning, you eagerly tell the premier that you'll take the job. Before you know it, you're getting off the airplane and standing in the capitol city of the United States. The premier said to get the information at all costs. You must choose between investigating the Pentagon's massive files and hearing the president's speech."

Step 3 Develop Story Characters

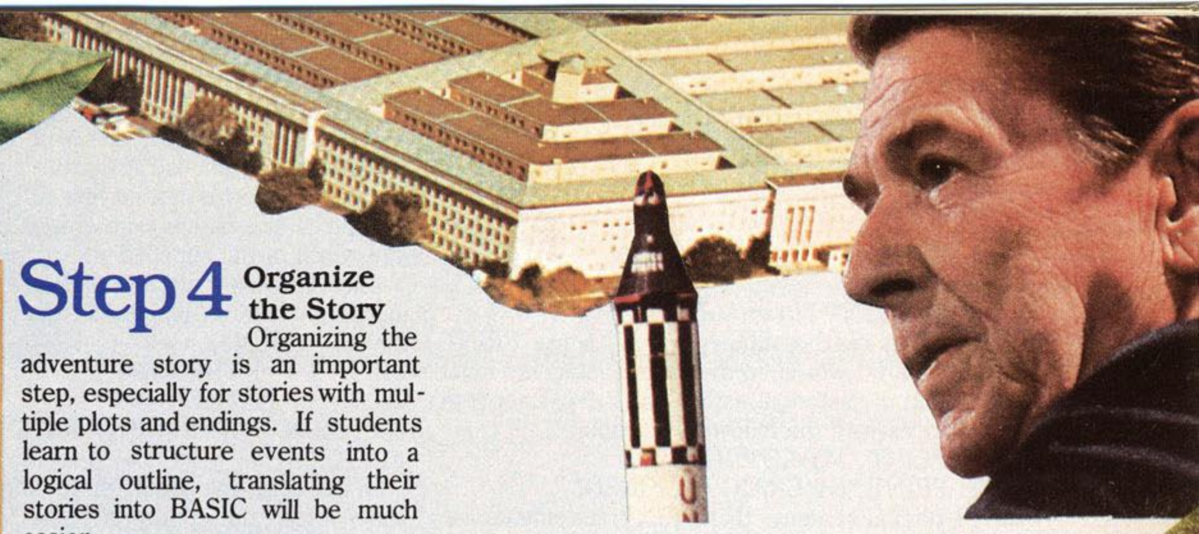
When students think of *characters,* they generally think of people (and sometimes animals). In an adventure story, characterization is much broader. It can include just about anything: a stone that assumes any shape, a fantastic creature from space, plants that walk and talk, and so on.

Activity: In a loose-leaf notebook, have students make a list of the characters they wish to have in their story, starting with the hero or adventurer. The list of characters should include good as well as bad characters.

To enhance their adventure story, I encourage students to add living obstacles to their list, such as fearless enemies to overcome, mute strangers with clues, or gate keepers who demand a secret password.

I also urge my students to consider including a "tenacious creature," an animal, person, or fantastic being who continually pops up in different places in the story.

In their notebooks, have students write a short description of the characters' physical and personality traits.



Step 4 Organize the Story

Organizing the adventure story is an important step, especially for stories with multiple plots and endings. If students learn to structure events into a logical outline, translating their stories into BASIC will be much easier.

Activity: One way to organize a story is to make a flowchart of it. Have students chart their stories in pencil on large paper. (You may want to pass out sample flowcharts from the first activity to remind students how a flowchart works.) Have students follow through their flowcharts to each of the endings.

Some of my sixth graders had fun illustrating their flowcharts to show their elaborate settings, imaginative endings, and fantastic characters.

Step 5 Write the Prose

When students are ready to write their prose, stress the importance of clear, concise, and correct sentences. Active sentences, instead of passive, make the action more exciting, as does using adjectives such as *ferocious* instead of *mean*.

Activity: Have students write out their prose in sections. The sections should include an introduction, several endings, and incidents in which the adventurer moves to a different setting. If students have drawn an accurate flowchart of their story, organizing the prose into sections should be fairly simple. My kids like to assign a separate page in a loose-leaf notebook for each section.

When students convert the prose into PRINT statements in step seven, they will have to make sure the lines fit on the computer screen. If you are using TRS-80 Models I/III, students will need to divide the prose into lines of 64 characters or less. Have students keep this in mind as they write their prose. (See chart, page 68, for character counts for other machines.)

Collect completed notebooks and correct students' spelling and grammar.

Step 6 Outline a Program for Story

Now students are ready to outline a program for their prose.

Activity: Using their notebook sections, students should make an outline of their story. Have students skim the lengths of the sections and estimate a line-number range for each. Here is a student's outline of a story that takes place in a haunted house.

Haunted House Story	**Line Numbers**
I. Introduction	0-99
II. Outdoors Activity	100-199
III. Second Floor Activity	200-299
IV. Second Floor Activity	300-399
V. Basement Activity	400-499
VI. Incident at Caretaker's	500-599
VII. Unhappy Ending	600-699
VIII. Happy Ending	700-799
IX. Mixed Ending	800-899
X. Play Again?	1000

At the top of each section in their notebook, have students write the line-number range they assigned to it.

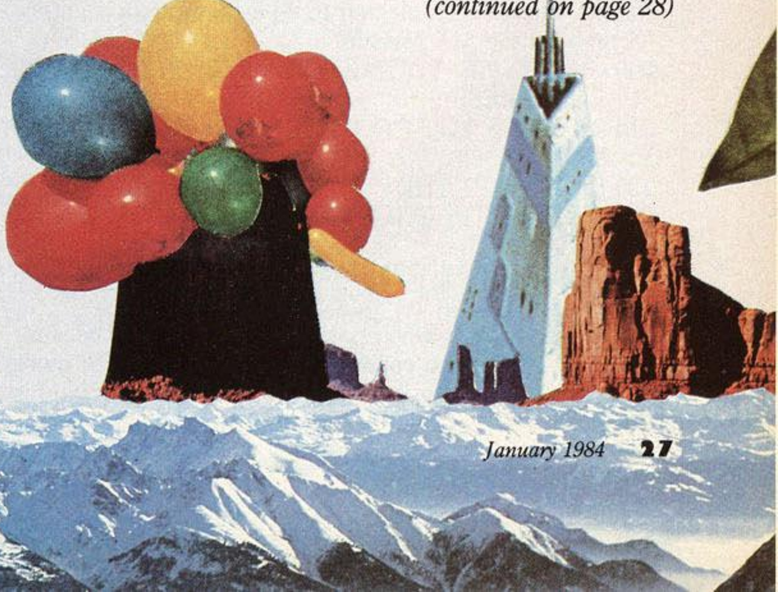
Step 7 Introduce Simple Program Commands

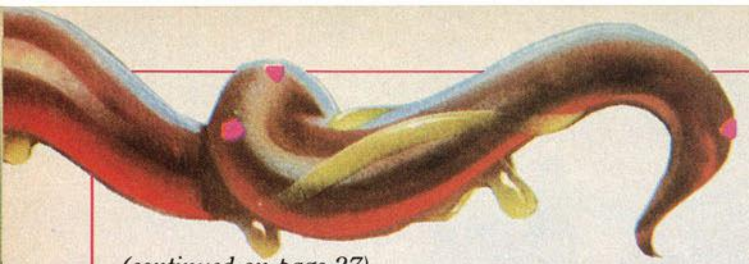
The simplest adventure programs use three basic commands: PRINT, GOTO, and INPUT. More advanced programs contain graphics and subroutines in which the adventurer goes to a separate part of the story, something happens, and then he or she returns to the original place.

For their first adventure program, I tell students to stick with the simple commands. We review how to write PRINT, INPUT, and GOTO commands. (Check programming texts if you need detailed instruction for these commands.)

Next, I pass out three information sheets containing special programming tips for using PRINT commands, branching to different parts of the story, and controlling the pace. Following is a description of their contents.

(continued on page 28)





(continued on page 27)

1. Using the PRINT command.

The first sheet reminds students how to use PRINT commands. To print words on the screen, students must enclose the text in quotation marks. I also explain how to insert line spaces with the following example:

```
10 PRINT: PRINT “MY ADVENTURE”
20 PRINT: PRINT “BY CRAIG DICKINSON”
```

Finally, I remind students that PRINT statements can contain no more than 64 characters inside the quotation marks, including spaces and punctuation.

2. Branching With INPUT and GOTO

The second sheet demonstrates the branching part of an adventure. That's where the adventurer must make a decision that leads one way or another.

The easiest way to do this is to break down the choices by number, as in sixth grader Melanie Beutel's *Jungle Adventure* example below.

```
200 PRINT “DO YOU (1) CHOOSE TO TURN AND FACE THE SNAKE”
210 PRINT “(2) CONTINUE ON THE PATH”
220 PRINT “(3) TURN BACK”
230 INPUT “TYPE IN YOUR CHOICE AND PRESS ENTER”;N
240 CLS
250 IF N = 2 THEN GOTO 400
260 IF N = 3 THEN GOTO 30
270 IF N <> 1 THEN GOTO 200
280 PRINT “CONGRATULATIONS ON YOUR COURAGE. THE SNAKE SLITHERS AWAY WHEN”
290 PRINT “IT SEES HOW MAD YOU ARE.”
```

When students are reading a computerized adventure story, they sometimes hit wrong keys. To prevent the computer from freezing, Melanie has added an error-trapping feature in line 270. Now, if a player hits the wrong key, the computer simply asks the question again.

Players also sometimes forget to press ENTER or RETURN after they have made a choice. I ask programmers to include at least one reminder (line 230) at the beginning of their program.

Another way to offer choices is to ask for input in words or letters. That's the subject of the third handout. Nathan VanRheenen elected to do it this way in his story “Search for the MX Missile.”

```
200 PRINT “IF YOU GO TO THE PRESIDENT'S SPEECH, PRESS S.”
210 INPUT “IF YOU GO TO THE PENTAGON, PRESS P.”;Z$
220 IF Z$ = “S” THEN GOTO 400
230 IF Z$ <> “P” THEN GOTO 200
240 CLS
250 PRINT “AS YOU NEAR THE PENTAGON, YOU NOTICE TWO. . . .”
```

Remind students who choose this method that because the input values are constantly changing, there is more room for error. Error trapping (line 230 in the program) is essential to keep players from accidently taking a wrong course or crashing the program.

A third, more advanced way of branching has the computer randomly choose adventure alternatives. The RANDOM command is like saying to the computer, “Pick a numbered alternative from one to three, or flip a coin to see which of the supplied alternatives the player takes.”

Allen Newman successfully used the RANDOM command in his story “Warrior's Adventure.”

```
200 S = RND(3)
210 IF S = 1 THEN 300
220 IF S = 2 THEN 400
230 PRINT “THE SIGN SAYS 'MAGIC WORD IS FINTO.'”
```

In this case, the computer automatically picks a number and goes to the appropriate line number; players don't type in anything.

3. Controlling the Pace

The third sheet shows how to let the adventurer move through the story at his or her own pace. One way to do that is to make the computer count from, say, one to 1,000 between each screen change (line 50 in the program below). Another way is to make the computer wait until the adventurer presses any key before changing screens (line 60).

Here's an example written by Jessica Davidson:

```
20 PRINT “IT IS THE YEAR 5000 A.D. YOU ARE IN A PLACE THAT WAS ONCE”
30 PRINT “CALLED WYOMING. IT IS NOW CALLED ZOOCUMBA. . . .”
40 PRINT
50 FOR T = 1 TO 1000: NEXT T
60 INPUT “PRESS ANY KEY TO CONTINUE”;A
70 CLS
```

I remind students to always clear the screen (line 70) before any new text is presented.

Step 8 Write Line Numbers and Commands

Once students understand how to use the PRINT, INPUT, and GOTO commands, it's time to write out the program.

Activity: I tell students to take out their loose-leaf notebooks and insert program commands and specific line numbers for each line of prose.

Because the prose sections are already written, students simply have to add line numbers, PRINT (for standard prose) or INPUT (for decisions) statements before each line, and quotation marks around the prose that is to appear on the screen.

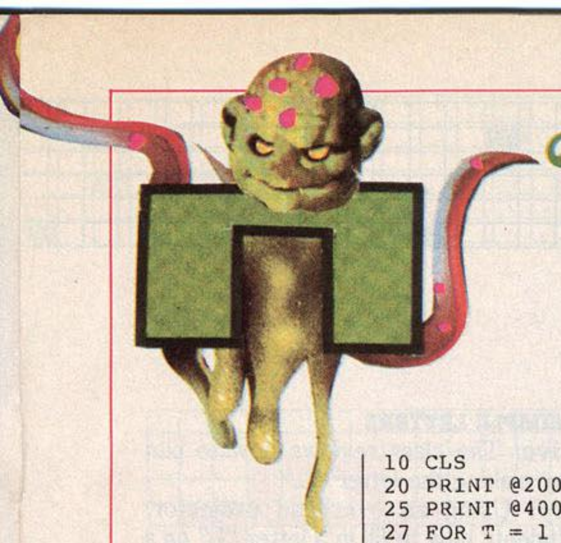
At the end of each section, students should either have an ending or a GOTO (for plot twists) statement.

Step 9 Type the Program into the Computer

Now students are ready to help each other type their program into the computer.

Activity: Have students team up with a partner. As one student reads the line numbers, the other student types. Have students take turns running and helping debug each other's programs. (See page 29 for an example of a complete student adventure story.) ■

J. Craig Dickinson is a math and reading teacher at the Asa C. Adams School in Orono, Maine.



Weelywockers

By John Trefethen and Dale Cross

This program is written for TRS-80 Model III computers. Conversion commands for other machines appear in the chart on page 68.

```
10 CLS
20 PRINT @200,"WEELYWOCKERS"
25 PRINT @400,"BY JOHN TREFETHEN AND DALE CROSS"
27 FOR T = 1 TO 2000:NEXT
29 CLS
30 PRINT "    YOU ARE THE PILOT OF FLIGHT 77.  YOU HAVE JUST CRASHED"
32 PRINT "NEAR BOOMBOODA ISLAND.  THE AREA IS INHABITED BY SEVEN-FOOT,"
34 PRINT "1100-POUND, GREEN AND PINK SPOTTED WEELYWOCKERS."
36 PRINT: PRINT "    YOU AND YOUR CO-PILOT ARE THE ONLY SURVIVORS.  TOGETHER,"
38 PRINT "YOU SALVAGE A FLARE GUN AND A HALF-EATEN TWINKIE FROM THE"
40 PRINT "WRECK.  WOULD YOU LIKE TO SHARE THE TWINKIE WITH THE CO-PILOT"
42 PRINT "OR LET HIM STARVE?"
50 PRINT: PRINT "    1) SHARE IT"
60 INPUT "    2) LET HIM STARVE";A
65 CLS
70 IF A = 2 THEN 1000
72 IF A<>1 THEN 50
80 PRINT "    YOU SPLIT THE TWINKIE AND GIVE THE CO-PILOT HALF, BUT"
82 PRINT "BEFORE HE CAN BITE INTO IT, A WEELYWOCKER SQUASHES HIM AND"
84 PRINT "GRABS THE TWINKIE."
86 PRINT:PRINT "    A GROUP OF WEELYWOCKERS TAKE OVER YOUR PLANE. "
88 PRINT "IT'S GETTING DARK OUTSIDE, SO YOU DECIDE TO LOOK FOR SHELTER"
90 PRINT "IN A CAVE.  YOU COME ACROSS A GIANT PIT."
92 PRINT "    WHAT DO YOU WANT TO DO?"
94 PRINT "    1) SLEEP IN THE PIT"
96 INPUT "    2) CONTINUE LOOKING FOR A CAVE  ";A
98 IF A = 1 THEN 1999
100 IF A = 2 THEN 3000
1000 PRINT "YOU EAT THE WHOLE TWINKIE.  THE CO-PILOT CRAWLS UNDER A"
1002 PRINT "TREE AND DIES."
1004 FOR T = 1 TO 3000:NEXT
1006 GOTO 86
1999 CLS
2000 PRINT "    YOU CRAWL INTO THE PIT AND GO TO SLEEP.  DURING THE NIGHT,"
2010 PRINT "YOU ARE STRUCK ON THE HEAD BY A COCONUT THAT FALLS FROM THE"
2020 PRINT "TREE ABOVE.  IT KNOCKS YOU OUT...."
2030 PRINT : PRINT "    WHEN YOU WAKE UP, YOU FIND YOURSELF TIED TO A TREE AND
2040 PRINT "SURROUNDED BY SAVAGE, MAN-EATING WEELYWOCKERS.  YOU REMEMBER"
2050 PRINT "THE FLARE GUN IN YOUR BACK POCKET.  THIS WOULDN'T BE A BAD"
2060 PRINT "TIME TO USE IT.  WHAT DO YOU THINK?"
2070 PRINT: PRINT "    1) SHOOT IT OFF TO SCARE THE WEELYWOCKERS"
2080 INPUT "    2) DON'T USE IT AND STILL BE IN A HEAP OF TROUBLE.";A
2090 IF A = 1 THEN 4000
2091 IF A = 2 THEN 5000
3000 PRINT "    YOU CONTINUE WALKING.  YOU WALK FOR MANY MILES, BUT YOU"
3010 PRINT "STILL DON'T FIND ANYTHING.  YOU ARE SOON LOST.  IN A FEW"
3020 PRINT "DAYS YOU WILL BE JUST ANOTHER STATISTIC...."
3030 END
4000 PRINT "    YOU YANK OUT THE FLARE GUN AND PULL THE TRIGGER."
4001 FOR X = 1 TO 2000:NEXT
4002 CLS
4003 PRINT "    BLAM!!!!!!!";
4010 PRINT : PRINT "    YOU HAVE JUST SCARED THE SPOTS OFF THE WEELYWOCKERS!"
4020 PRINT "THEY HAVE NEVER SEEN A FLARE, SO THEY THINK YOU ARE A GOD OR"
4030 PRINT "SOMETHING.  THE WEELYWOCKERS GIVE YOU FOOD AND A NICE PLACE"
4040 PRINT "TO STAY.  YOU DECIDE TO LIVE THERE THE REST OF YOUR LIFE...."
4050 END
5000 CLS: PRINT "    YOU DECIDE NOT TO USE THE FLARE GUN.  THE WEELYWOCKERS"
5010 PRINT "DO STRANGE DANCES AROUND YOU AND SPRINKLE YOU WITH A BLACK"
5020 PRINT "POWDER.  YOU SOON FALL ASLEEP.  YOU WILL PROBABLY NEVER"
5030 PRINT "WAKE UP AGAIN...."
5040 END
```

line 10
Clears screen.

lines 20-25
Prints words in quotes in the middle of the screen.

line 27
The computer counts to 2000 and then continues to the next line.

lines 30-50
Prints words on the screen.

line 60
Asks the player to make a decision.

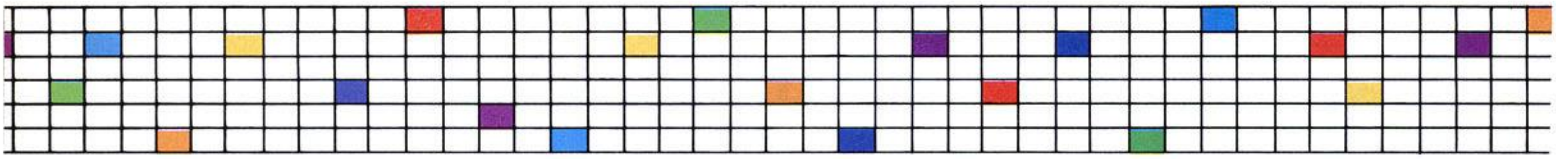
line 70
If player chooses second choice, the computer goes to line 1000.

line 72
If player does not choose the first choice or the second choice, the computer goes to line 50. If the player chooses the first choice, the computer goes to the next line.

line 1006
The computer loops back to line 86.

line 3030
One of three endings in the story.

John Trefethen and ***Dale Cross*** were sixth graders at Adams School in Orono, Maine when they wrote this program last year.



Introducing Graphics:
Part II of a Two-Part Series

FIVE EASY GRAPHICS TO MAKE

By Dave Kirchner

In the first part of this two-part series (last issue), computer teacher Dave Kirchner presented a step-by-step demonstration program of how to program graphics on the Apple computer.

In this issue, Dave shows you how to teach students to make five different designs using Apple graphics. (See chart, page 31, to convert the activities for use on Atari, Commodore, Radio Shack, and TI machines.)

To make these graphics, students should know how to enter, correct, RUN, and LIST a simple program. They should also be familiar with the GR, PLOT, and COLOR= commands, that was introduced in Part I of this graphics series.

Before presenting the activities, prepare a special graphics grid on paper. To make one, write the numbers 0 to 39 across the top of a piece of graph paper, starting with 0 and ending with 39. Then write the numbers 0 to 39 down the left side, again labeling the first box 0 and the last 39. Write out the 16 Apple colors and their corresponding numbers on the bottom of the grid. The colors are as follows:

0	Black	8	Brown
1	Red	9	Orange
2	Dark Blue	10	Grey
3	Purple	11	Pink
4	Dark Green	12	Green
5	Grey	13	Yellow
6	Blue	14	Aqua
7	Light Blue	15	White

Make copies of the blank graphics grid for each student.

Also make one copy per student of the graphics pictures on pages 31, 32, and 33.

Review the 16 Apple colors with students, referring to the graphics grid or to the color chart prepared in last month's lesson. Also remind students that, before programming graphics, they must type in GR to put the computer in the graphics mode.

You're now ready to begin!

MAKE SIMPLE LETTERS

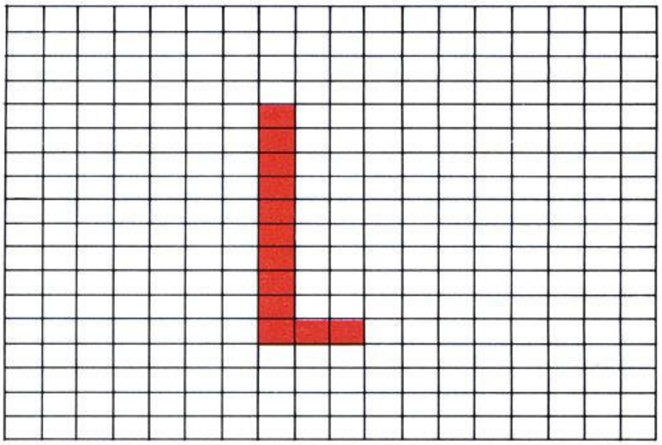
Objective: The class reviews how to plot points by making the letter "L."

Activity: Using an overhead projector, show students how to fill in a letter "L" on a graphics grid. Have the class tell you the PLOT commands, one by one, that would produce the same letter "L" on the computer screen.

Remind children that each PLOT command should contain two numbers. The first number tells the computer how far to go across, starting with 0 in the upper left corner. The second number tells the computer how far to go down, starting from the top of the screen.

PLOT 10, 15, for example, means to go 10 spaces across and 15 spaces down to fill in a square. The graphics grid sheets help students find the numbers they need.

After writing the commands on the chalkboard, have a student enter them in the computer to see the results.



Sketch of the letter "L" on a graphics grid sheet.

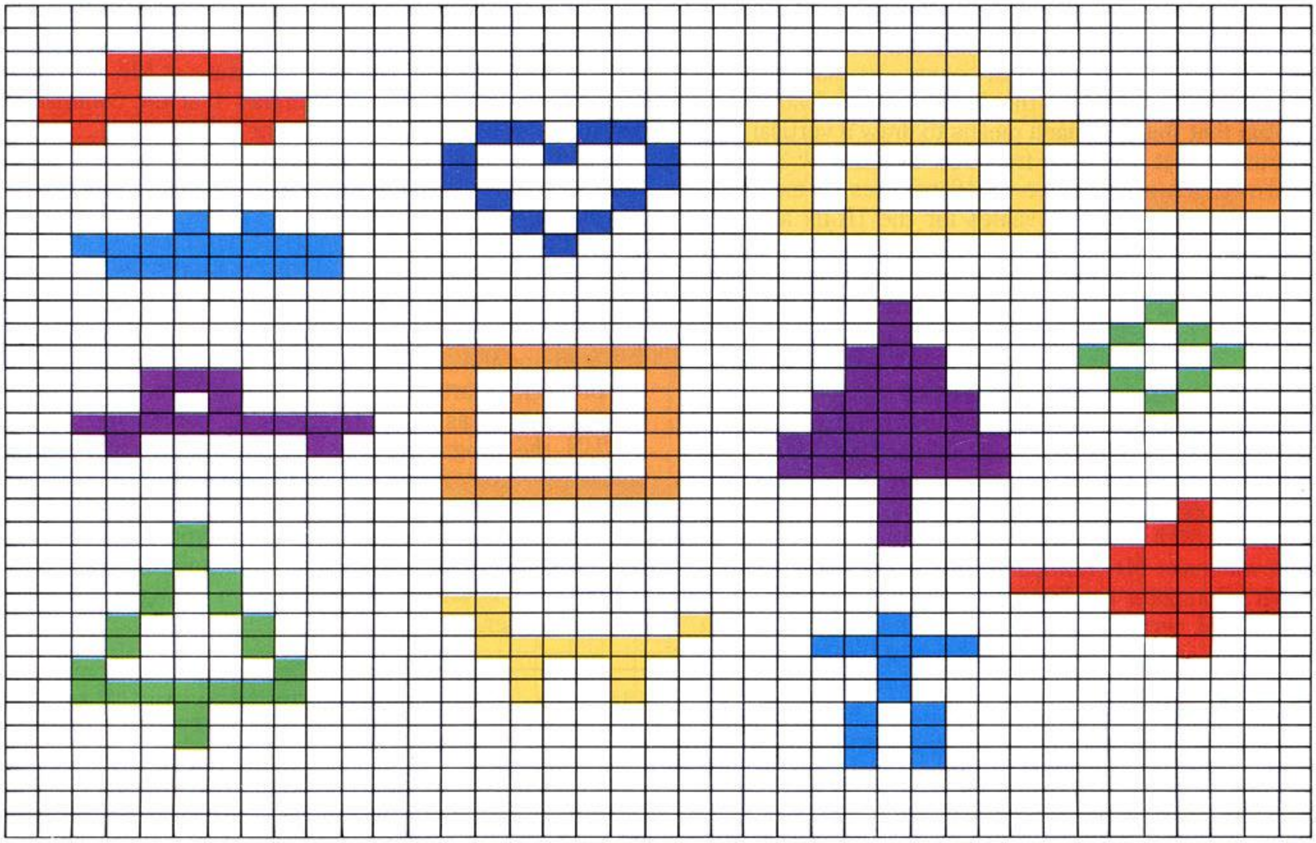
Following is a sample program that will produce a red letter "L."

```
5 GR
10 COLOR=1
20 PLOT 10,15
30 PLOT 10,16
40 PLOT 10,17
50 PLOT 10,18
60 PLOT 10,19
70 PLOT 11,19
80 PLOT 12,19
```

Remember that the numbers after the PLOT commands can vary according to where on the screen students start making the letter. If students type in a number that's too big (any number over 39), they will receive an ILLEGAL QUANTITY error message.

If the programs your students write are incorrect, have volunteers debug them.

As an extension activity, divide students into five groups. Assign a letter for each group to reproduce on the graphics screen: E, F, H, I, T.



A group of small graphics pictures. Students can program one simple picture and then team up with other students to create a scene.

2

MAKE MORE COMPLEX SHAPES

Objective: Students practice using the PLOT command on their own to produce more complex shapes.

Activity: Give each student a copy of the graphics grid with small pictures on page 31. Have them pick one picture and write a program to reproduce it anywhere on the computer screen, using the PLOT and COLOR= commands.

Here's a sample program to produce a colorful hat.

```
5 GR
10 COLOR = 1
20 PLOT 10,10
30 PLOT 11,10
40 PLOT 12,10
50 PLOT 10,11
60 PLOT 12,11
70 COLOR = 5
80 PLOT 9,12
90 PLOT 10,12
100 PLOT 11,12
110 PLOT 12,12
120 PLOT 13,12
130 END
```

Once students have perfected their graphics, have them get together with other students to combine individual pictures into an overall scene.

3

SHOW A NEW WAY TO MAKE LINES

Objective: The class learns to use the VLIN and HLIN commands to make lines.

Activity: On the chalkboard, draw a rectangle to represent the computer screen. Sketch in the numbers 0 to 20 across the top and down the side of the rectangle to correspond to the upper left corner of the computer graphics grid.

Next draw a horizontal line in row 10 that stretches from column five to column 20.

Discuss all the PLOT commands needed to draw the line across a computer screen. They are: PLOT 5,10; PLOT 6,10; PLOT 7,10; and so on, to PLOT 20,10.

Introduce the HLIN and VLIN commands for making lines. Write on the board: HLIN 5,20 AT 10. Explain that this command means to draw a horizontal line at row 10 that stretches from column five to column 20.

Have a student volunteer type the command into a computer to see if it works. (Make sure the computer is in the graphics mode.) Have another volunteer change the numbers to see what happens.

(continued on page 32)

Easy Graphics *(continued from page 31)*

Repeat this lesson using a vertical line. On the chalkboard, draw a vertical line in column 10 that goes from row 5 to 20. Write on the board: VLIN 5,20 AT 10. Explain that this command means to draw a vertical line in column 10 that stretches from row five to row 20.

Allow each student five or 10 minutes to experiment with putting in different values for the HLIN and VLIN commands.

Have students rewrite their programs from the previous activity to include these commands. Ask students if they think using HLIN and VLIN is easier.

4

DRAW MR. COMPUTER

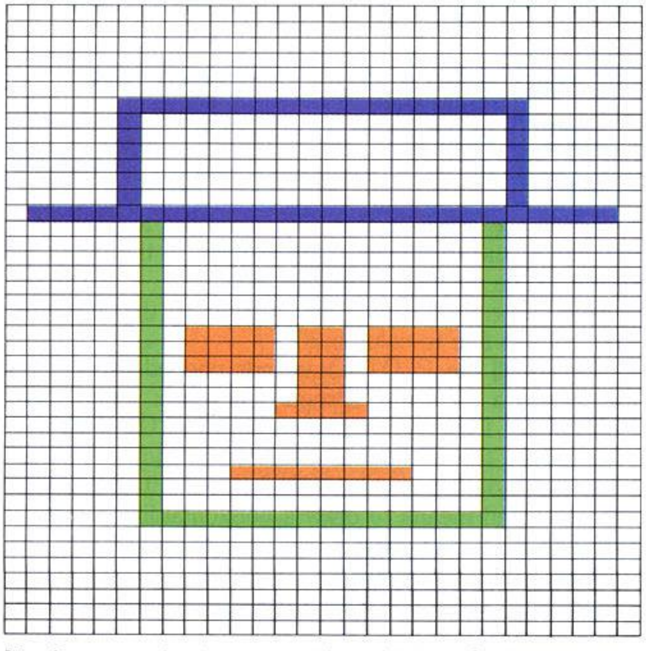
Objective: The class practices using PLOT, VLIN, HLIN, and COLOR= commands to create a large picture. Students also learn the REM command.

Activity: Tell students they are going to write a program that will make Mr. Computer appear on the screen.

Mr. Computer has been carefully designed to use only PLOT and vertical and horizontal line commands.

While a student passes out copies of the Mr. Computer picture (see page 32), draw a sketch of Mr. Computer on the board. Use different colored chalk to highlight each feature: the hat, face, eyes, nose, and mouth.

The first lines of this program should contain REM (REMark) statements. Explain to students that the computer ignores REM commands, but programmers use them all the time to make program listings easier to read. REM MR. COMPUTER, for example, tells the programmer that this program will draw a picture of Mr. Computer. REM HAT tells the programmer that the commands that follow will draw Mr. Computer's hat.



Mr. Computer sketch on a graphics grid sheet. Students program Mr. Computer as a class.

Set up a structure for students to follow by writing all the REM statements on the board. Write, in this order, REM MR. COMPUTER, REM BY MR. KIRCHNER'S FOURTH GRADE CLASS, REM HAT, REM FACE, REM EYES, REM NOSE, and REM MOUTH. This tells students that the program will start with a title and then do each section in a specific order.

Go around the class, asking each student for one line of the program, starting with the REM statements. Type in the line exactly as students dictate it.

RUN the program every few lines, especially if you suspect an error. Allow students to pick their own colors, changing them whenever they see fit.

At the beginning of each section, you may need to remind students to add the REM statement.

Following is one possible program listing for making Mr. Computer.

```
10   REM  MR. COMPUTER 170  HLIN 14,17 AT 23
20   GR                180  PLOT 14,22
30   REM  HAT          190  PLOT 17,22
40   COLOR= 6          200  HLIN 22,25 AT 21
50   HLIN 11,28 AT 6   210  HLIN 22,25 AT 23
60   HLIN 7,32 AT 13   220  PLOT 22,22
70   VLIN 7,12 AT 11   230  PLOT 25,22
80   VLIN 7,12 AT 28   240  REM  NOSE
90   REM  FACE         250  COLOR= 1
100   COLOR= 1         260  VLIN 21,26 AT 19
110   VLIN 14,33 AT 12 270  VLIN 21,26 AT 20
120   VLIN 14,33 AT 27 280  PLOT 18,26
130   HLIN 13,26 AT 33 290  PLOT 21,26
140   REM  EYES        300  REM  MOUTH
150   COLOR= 15        310  HLIN 16,23 AT 30
160   HLIN 14,17 AT 21 320  END
```

Possible Program Listing for Mr. Computer

5

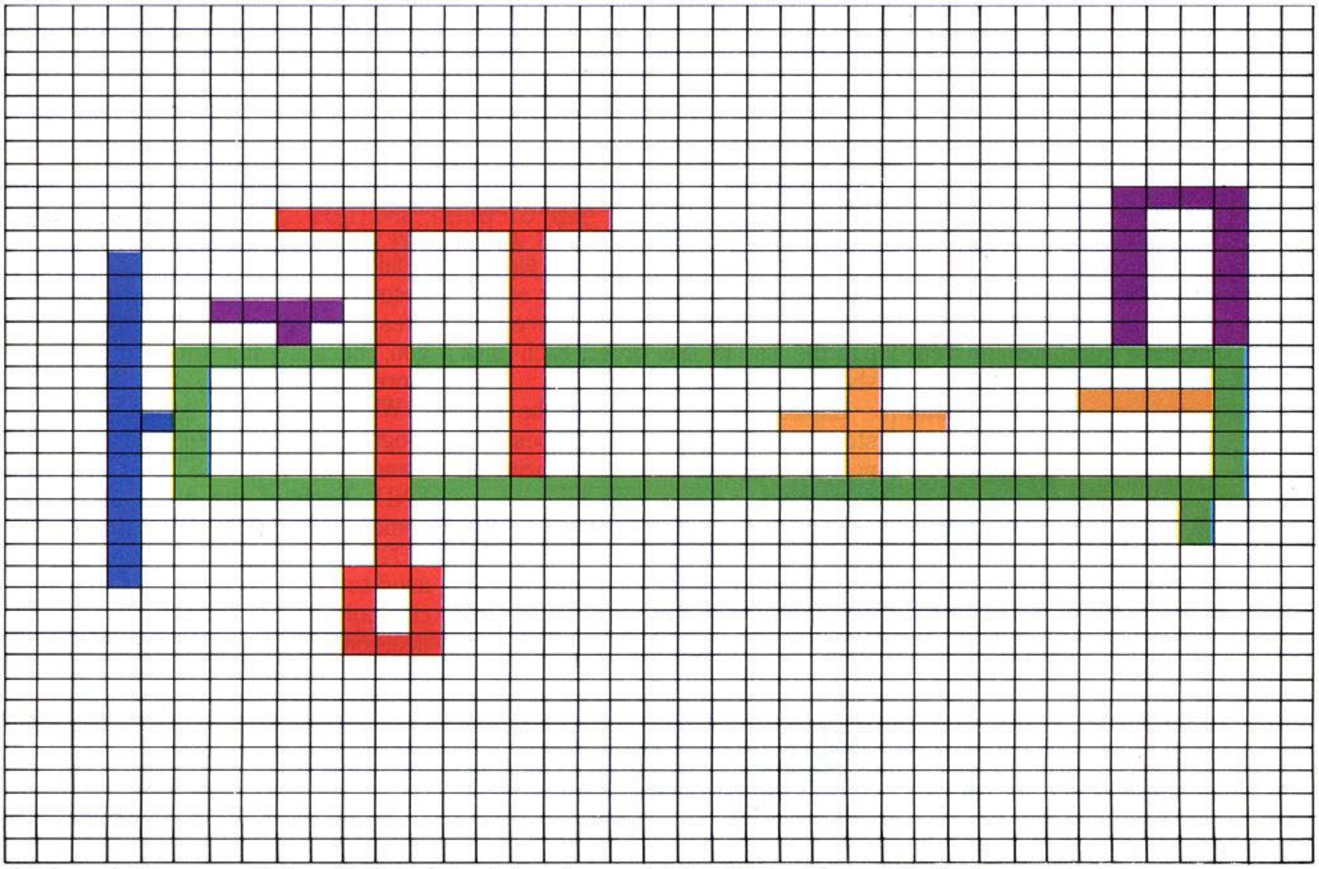
DRAW AN AIRPLANE

Objective: Students work on their own to produce a more complex drawing.

Activity: Pass out a copy of the airplane diagram on page 31 to each student. On a sheet of paper, have students write out a program to produce a similar airplane. (Expect quite a few questions on how to draw lines.)

Remind students to use REM statements to divide the program into sections. Again, allow students to experiment with different colors.

Each student's program will contain a variety of different approaches to creating the airplane, from everything on how the sections are divided to what colors go where.



Airplane sketch on a graphics grid sheet. The airplane is a good independent assignment for beginners.

Once students are finished writing, have pairs of students test each other's programs. One person types while the other person dictates and proofreads.

Following is a program listing to produce an airplane.

Possible Program Listing for an Airplane.

```
10   REM  AIRPLANE
20   GR
30   REM  FUSELAGE
40   COLOR= 1
50   HLIN 5,36 AT 17
60   HLIN 5,36 AT 23
70   VLIN 18,22 AT 5
80   VLIN 18,22 AT 36
90   REM  TAIL
100  HLIN 33,36 AT 10
110  VLIN 11,16 AT 33
120  VLIN 11,16 AT 36
130  REM  FRONT WINGS
140  COLOR= 15
150  HLIN 8,17 AT 11
160  HLIN 9,18 AT 23
170  VLIN 12,22 AT 11
180  VLIN 12,22 AT 15
190  REM  BACK WING
200  HLIN 32,36 AT 19
210  REM  PROPELLER
220  VLIN 13,27 AT 3
230  PLOT 4,20
240  REM  GUN
250  HLIN 6,9 AT 15
260  PLOT 8,16
270  REM  INSIGNIA
280  COLOR= 6
290  HLIN 23,27 AT 20
300  VLIN 18,22 AT 25
310  REM  FRONT WHEEL
320  COLOR= 1
```

```
330  VLIN 24,26 AT 11
340  COLOR= 15
350  VLIN 27,30 AT 10
360  VLIN 27,30 AT 12
370  PLOT 11,27
380  PLOT 11,30
390  REM  BACK WHEEL
400  VLIN 24,25 AT 35
410  END
```

Once the airplane is completely debugged and colored to the student's satisfaction, challenge students to add clouds, a pilot, or a bird by first sketching them on graph paper and then writing the commands in their airplane program listing. Have partners enter the new commands into the computer.

Have students add PRINT statements for the title and author.

Future assignments can include ocean liners, trucks, sailboats, and even self-portraits! ■

Dave Kirchner teaches a course called "Computers for Kids" in the Denver, Colorado, Public School System.

LEARNING CENTER

Go With the Flow

By Sandra Markle

This month's column provides a group lesson and four task cards on flowcharts and how they can help design computer programs in BASIC.

Setting Up

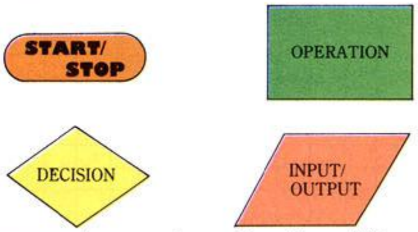
You'll want to add these commands to your "Command Post":

END signals the computer that instructions are complete.

GOTO tells the computer to move to another point in the program.

NEW orders the computer to clear its memory and store what follows.

In another spot on your bulletin board, display the following:



→ Arrows show direction of flow.

A Group Lesson

Short programs like the ones in the last two Learning Centers don't require much planning or organizing. But for longer programs, students will need to think through each operation and put the steps in a logical order. One way to do this is through flowcharting.

Explain to students that a flowchart is like a map. It shows the exact steps that are needed to solve a problem or to do a particular task. It also shows the correct order for doing the tasks.

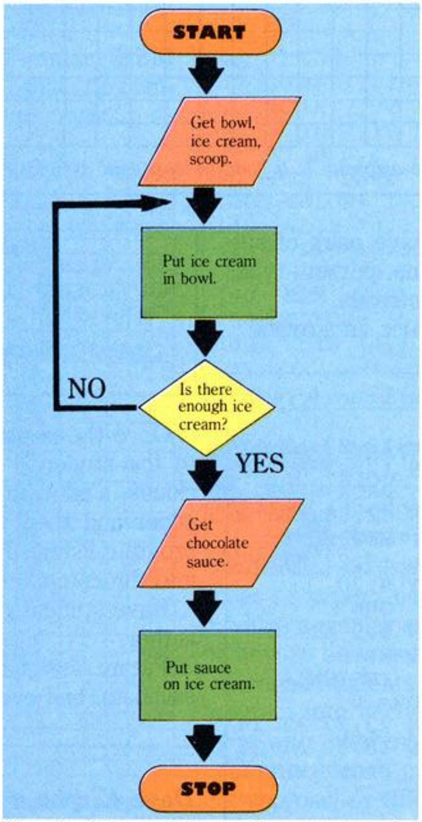
Each flowchart shape posted on the bulletin board has a special meaning. An *oval* tells where to start or stop. A *rectangle* indicates that a specific job needs to be performed, such as adding two sums together or baking cookies. A *polygon* shows a point where input or output will be supplied, such as getting supplies or playing a song. A *diamond* indicates that a yes/no decision must be made, such as whether or not you have enough money to buy a pizza.

Ask students to make a list of tasks they would need to perform if they were making a chocolate sundae. The list should include: *get a bowl, ice cream, and scoop; put ice cream into bowl; get chocolate sauce;* and *put sauce on ice cream.* Have kids put the list in the order each task should be completed.

Explain to students that the first step, getting the supplies, goes in a polygon because it means bringing something to do the job.

Draw a rectangle underneath this and connect the shapes with an arrow to show that the first step leads to the next. What happens next? *(Put ice cream into bowl.)* This is an operation, so it goes inside a rectangle.

Ask how students would know if the bowl was full? This would obviously call for a check and a decision, so put a diamond next. Inside it write: Is the bowl full? If a check showed "no" it wasn't full, more ice cream would be needed. Draw an arrow from one side of the diamond, label it "no," and point it back into the line of flow, just above the step that would need to be repeated. Draw a second arrow straight down, label it "yes," and point it to another polygon, because it's time to bring in more supplies.



Flowchart for making an ice cream sundae.

When a flowchart is changed into a program, START becomes the command NEW, and STOP becomes END. Each of the other steps becomes a separate line statement. GOTO is a command that can be used to send the computer to a specific point in the program, as when a decision makes it necessary to go back through earlier steps.

Using the Task Cards

Cut and laminate the four task cards, and file them in a box near your computer. Here's a summary of the cards' objectives.

Task Card #11: Students compare the steps of a flowchart to line statements in a program listing.

Task Card #12: Children discover that GOTO allows a jump to another point in the program.

Task Card #13: Students practice using GOTO. Answers: 70, 30, 90, 50, 110.

Task Card #14: Kids use GOTO to make the computer repeat part of a program. Answer:

```
NEW
10 PRINT "WHAT LETTERS DID THE BOY SAY"
20 PRINT "WHEN HE OPENED THE COOKIE JAR?"
30 PRINT "U"
40 PRINT "R"
50 PRINT "M"
60 PRINT "T"
```

Sandra Markle is the author of several computer books for children.

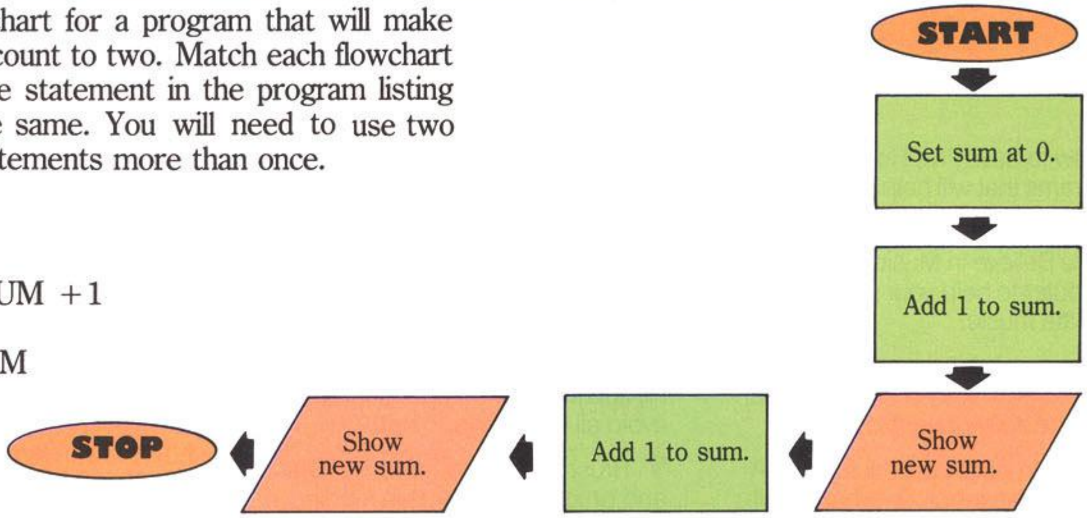
LEARNING CENTER TASK CARD

11

SHAPE MATCH

Here's a flowchart for a program that will make the computer count to two. Match each flowchart step to the line statement in the program listing that means the same. You will need to use two of the line statements more than once.

A. END
B. NEW
C. SUM = SUM +1
D. SUM = 0
E. PRINT SUM



LEARNING CENTER TASK CARD

12

BEAR HUNT

This is the story of what happened when you went on a bear hunt. But the adventure is scrambled. To find out what really happened, type in the program. Then type RUN and press ENTER. The GOTO command will straighten the events out for you.

```
NEW
10 PRINT “YOU WALKED THROUGH TALL GRASS,”
20 GOTO 130
30 PRINT “ON SHORE, YOU STARTED TO BUILD A FIRE,”
40 GOTO 110
50 PRINT “AND SLID INTO THE RIVER.”
60 GOTO 30
70 PRINT “YOU RAN INTO A CAVE.”
80 GOTO 150
90 PRINT “YOU RAN ALL THE WAY HOME.”
100 GOTO 170
110 PRINT “BUT IT STARTED TO RAIN.”
120 GOTO 70
130 PRINT “YOU SLIPPED IN THE MUD,”
140 GOTO 50
150 PRINT “INSIDE, THERE WAS A NASTY BEAR.”
160 GOTO 90
170 END
```

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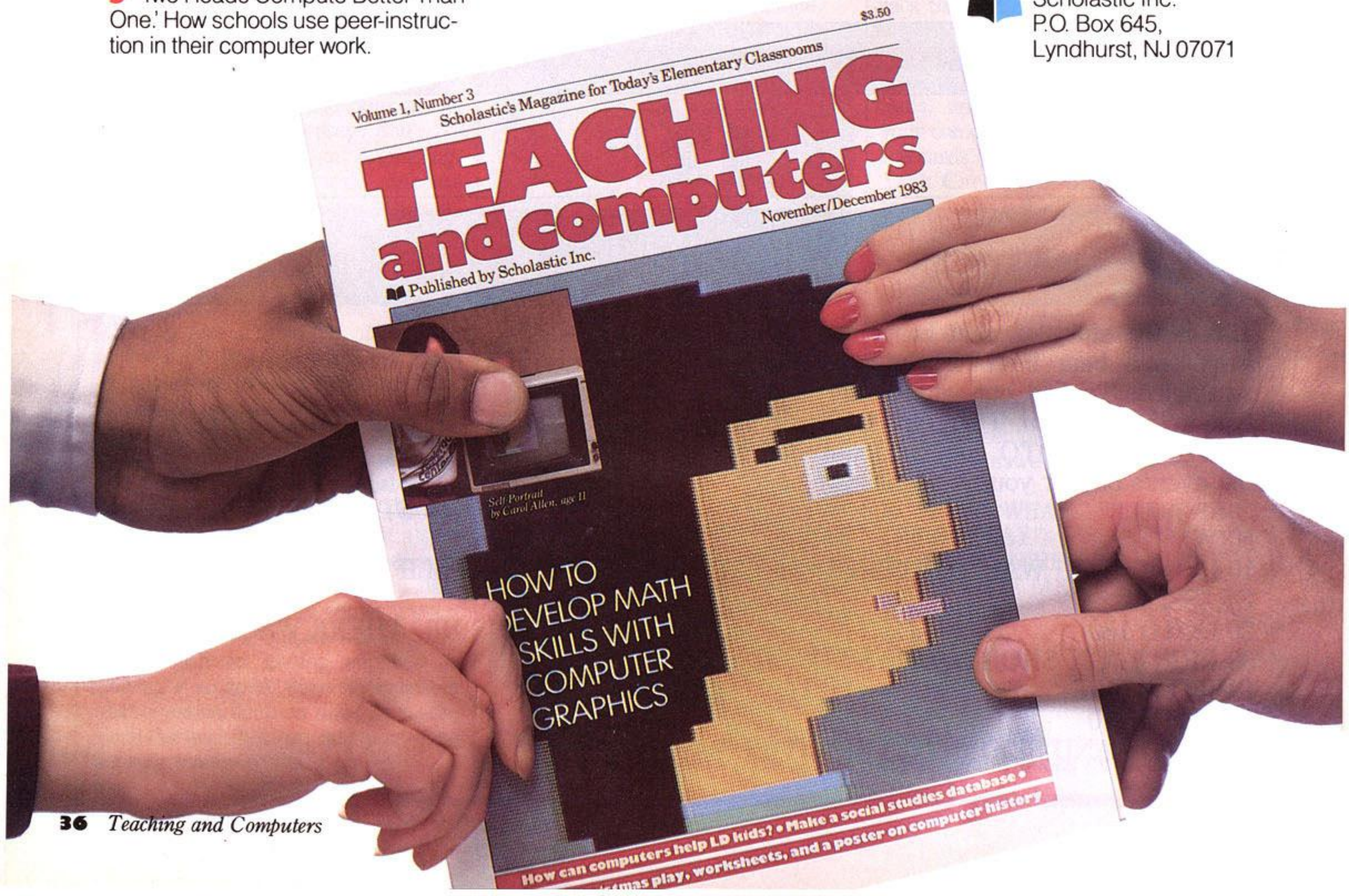
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LEARNING CENTER TASK CARD

13

GET IN ORDER

Here is what the computer displayed on the screen when a special program was RUN:

```
4
8
12
24
36
```

The special program's listing is at right, but it is not complete. Fill in the line number to which each GOTO command was sending the computer in the program listing. Type your completed program into a computer, type RUN, and press ENTER to see if you are right.

```
NEW
10 PRINT 2*2
20 GOTO ☐
30 PRINT 6*2
40 GOTO ☐
50 PRINT 20+16
60 GOTO ☐
70 PRINT 16-8
80 GOTO ☐
90 PRINT 48/2
100 GOTO ☐
110 END
```

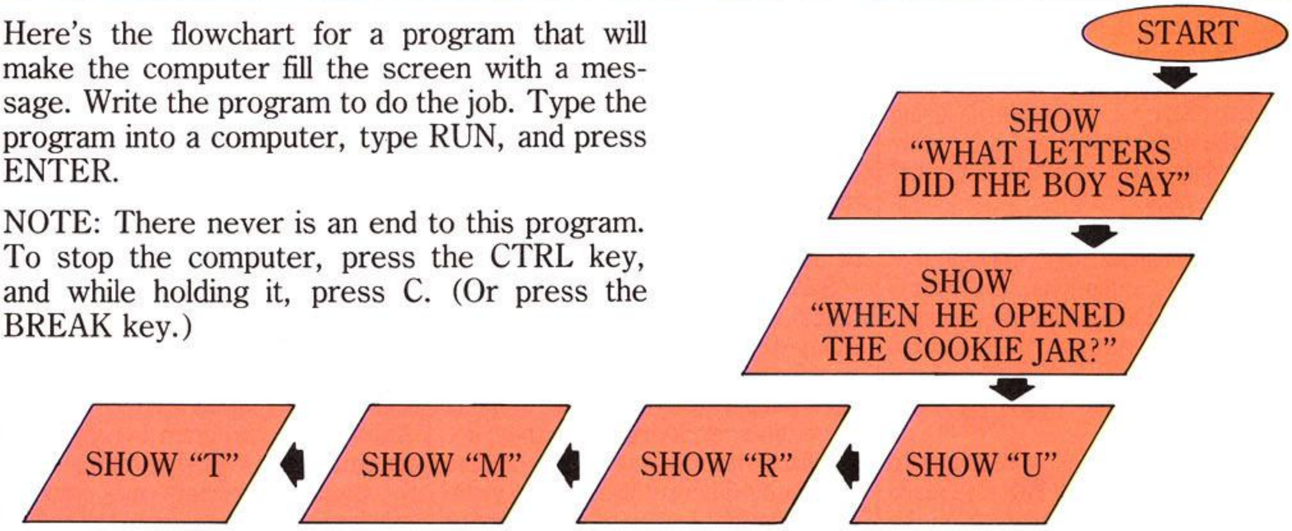
LEARNING CENTER TASK CARD

14

FULL UP!

Here's the flowchart for a program that will make the computer fill the screen with a message. Write the program to do the job. Type the program into a computer, type RUN, and press ENTER.

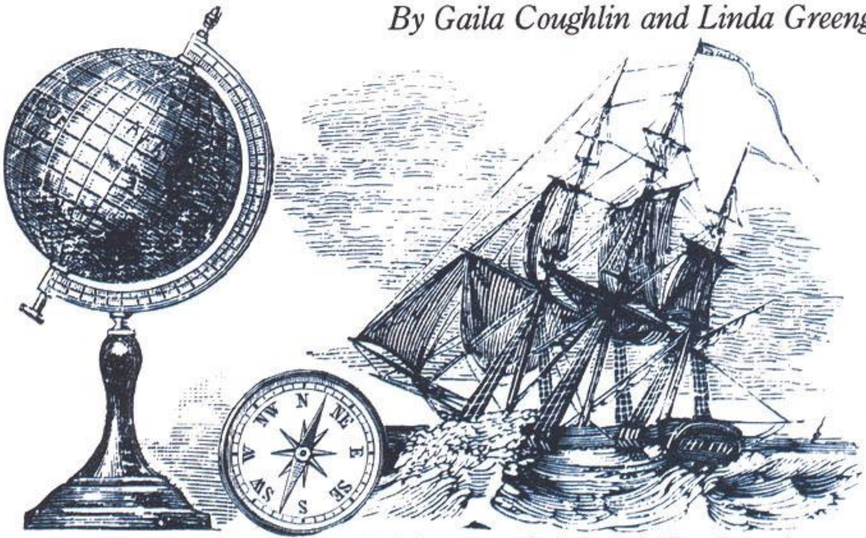
NOTE: There never is an end to this program. To stop the computer, press the CTRL key, and while holding it, press C. (Or press the BREAK key.)


START
SHOW "WHAT LETTERS DID THE BOY SAY"
SHOW "WHEN HE OPENED THE COOKIE JAR?"
SHOW "U"
SHOW "R"
SHOW "M"
SHOW "T"

COMPUTING IN THE CONTENT AREAS

Sail the Seas With Geography Search

By Gaila Coughlin and Linda Greengrass



Introduce geography and history of Age of Exploration (1400-1800 A.D.) to students.

GRADE LEVEL: Four and up
CURRICULUM AREAS: Social Studies; mathematics
HARDWARE AND PERIPHERALS: Apple II, Apple II Plus, or Apple IIe.
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Program Description

Geography Search is a group simulation program in which students sail a ship to Vesuvia, an imaginary land in the West, in search of the City of Gold. During their voyage, young crew members must avoid pirate attacks; maintain a good supply of provisions; chart a proper course using longitude and latitude; and accurately record data such as wind direction, depth of water.

The program comes with 25 *Geography Searchbooks* that contain lessons, review questions, and forms for recording data during the voyage. Students read through their *Searchbook* before playing the game and then refer back to it if they have questions.

Only one computer is required to use *Geography Search* because each group needs only five minutes on the computer per turn. While one group is working on the computer, the others can be plotting a course or filling out charts in their *Searchbook*.

Running the Program

Here are a few pointers for using the program in the classroom:

- The pace of the program can be controlled by the computer or by the student. If you choose the computer-controlled option, the computer runs through the program at a set pace. The student-controlled option allows the player to progress through most of the program at his or own pace by pressing the space bar to continue. (The exception is the chart of data, which is only displayed for a few seconds in both options.)
- *Geography Search* is generally a cooperative rather than competitive program; the idea is to explore an unknown world and learn geography concepts on the way. You can make it more competitive by designating winners as the first ones to reach home or those with the most money.
- Sailing to the New World and back takes about 10 half-hour sessions. Many teachers find that students benefit greatly from additional voyages because players tend to spend more time exploring once they are familiar with the mechanics of the program. Theoretically, the game could go on indefinitely as groups continue to return to the New World in search of gold.
- When you start the program, the first item the computer asks for is the wind direction. Refer students to their *Searchbook* for the answer: it's blowing from the east, or from 90 degrees on the compass.
- After students enter the wind direction and set sail, the computer generates a chart of data that includes: wind direction, wind speed, depth of water, amount of provisions left, position of the stars, the time recorded on the ship's clock, and amount of gold and money amassed. The chart is displayed very briefly, so students must cooperate to record all the information before it disappears. The teacher's manual suggests that each crew member take responsibility for recording one item of information.
- At one point, students chart latitude using a simulated sky chart with a North Star. Before playing the game, make sure students can identify the North Star and follow its appearance in different parts of the sky.
- Longitude is portrayed by a moving graphic that requires simultaneous attention to a digital time record and a rapidly moving shadow. As this is a little confusing at first, study and describe this movement for students before they attempt to find the longitude.
- The *Searchbook* notes that a safer, but longer, route home lies to the west. Ask students who take this course to record the distance covered and to provide a map of the unknown island before turning back. The map could be as simple as an outline of the island or as complex as a description of the terrain from point to point along the coast.

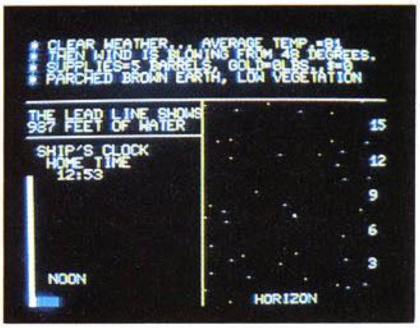
Using the Program in the Curriculum

Although the program is appropriate for students in grades four and up, fourth-grade teachers may want to emphasize broad geographical and social studies concepts, like motivations of the early explorers, hardships involved in early navigation methods, the variation of ocean depth at sea, and qualities of a good harbor, rather than mapping and math skills.

Geography Search could be used in a geography class or a social studies class dealing with the Age of Exploration, Elizabethan England, or the colonization of America.

The following activities will help students get the most from *Geography Search.*

- Students quickly learn from the *Searchbook* that a primary reason for exploring is to find gold. Ask students to pretend they're citizens of the Old World who want to explore the New World. Have them write a letter to Queen Deborah of Vesuvia explaining why they want to sail west.



```
* CLEAR WEATHER... AVERAGE TEMP.=81
* THEN WIND IS BLOWING FROM 48 DEGREES.
* SUPPLIES=5 BARRELS, GOLD=0LBS., $=0
* PARCHED BROWN EARTH, LOW VEGETATION

THE LEAD LINE SHOWS
987 FEET OF WATER

SHIP'S CLOCK
 HOME TIME
  12:53
```

The chart is displayed briefly.

- As a class, make a desk-top papier mâché model of the Western Hemisphere. Use toothpicks with slips of paper glued to them to indicate miles above or below sea level along the coastlines. Paint all the unsafe harbors in red and the safe harbors in green. Paint blue arrows to indicate water currents and white arrows to indicate trade winds.
- Have students plan a trip to a nearby city, to another state, across the country, and to another country using a road map.
- Another mapping activity is to have each student draw in the route from his or her home to school on a local map. Decide who lives closest and who lives farthest.
- Have students practice locating places on the local map by coordinates. Then have them locate cities of the world, by latitude and longitude.
- If you have a Logo program, make a transparency of a grid with coordinates and place it over the computer screen. Have students move the Logo turtle to different points on the grid.
- Older groups might keep close tabs on the wind speed, the direction of the wind, and the distance traveled to determine the rate at which the ship is sailing during the game.
- *Geography Search* offers many role-playing opportunities. Students can imagine what would be said in an audience with Queen Deborah of Vesuvia, enact an encounter with pirates, or write a story about two ships arriving at the City of Gold at the same time.

Related Programs

1. *Mapware,* for Atari 400, 800 (40K, disk), adults, $22.95. Atari Program Exchange, PO Box 3705, Santa Clara, CA 95055. (Teacher creates maps on the computer.)
2. *Map Reading,* for Apple (32K), grades 3 to 5, $19.95. Micro Power and Light Co., 12820 Hillcrest Rd., Suite 224, Dallas, TX 75230.
3. *Introduction to Geography: Mapping the World,* for Apple (16K), grades 3 to 8, $30. Orange Cherry Media, 7 Delano Dr., Bedford Hills, NY 10507.
4. *Geography Plus,* for TRS-80 Models I/III (16K cassette), grades 4 to 6, $49.95. Data*Soft of N.H., 22 Stevens Ave., Merrimack, NH 03054. ■

Gaila Coughlin is upper school coordinator at the Bank Street School for Children, New York City. ***Linda Greengrass*** is a school services librarian at the Bank Street College of Education, New York City.

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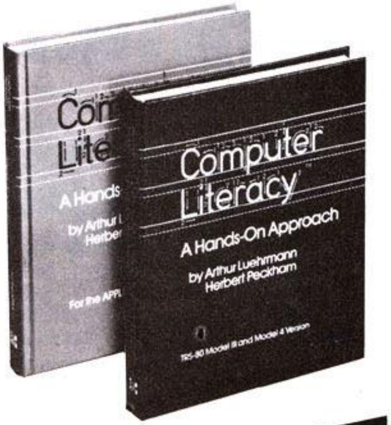

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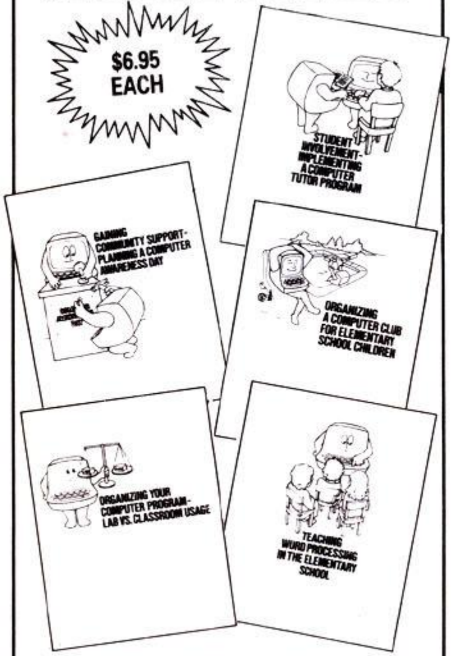
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TEACHER'S GUIDE—ELECTRONIC CALENDAR

Computing in January

By Lorraine Hopping

The January calendar shows how computers are used in our world. This month's teacher's guide answers the questions and provides detailed information on some of the facts and activities presented on the calendar.

January 4:

Computers in School

Explain to students that a tiny computer—no bigger than a fingernail—is built into many products that we use. These tiny computers (or microprocessors) are built to do different things. One might be built to control the temperature in a microwave oven, or to turn the oven on or off at a set time. Other microprocessors control digital clocks, telephone systems, copy machines, electronic toys, or automatic cash registers. Have children check for these in your school.

January 10-11:

Computers in Law Enforcement

Computers provide law enforcement officials with information on missing persons, current and past prisoners, and the license plate numbers of stolen cars.

January 13:

The Alphanumeric Bar Code

The drawing on the calendar is an alphanumeric bar code (*alpha* for letters and *numeric* for numbers). These product codes, as they are commonly known, are on canned or packaged products, primarily in grocery stores.

Have students bring in sample product codes to compare. Explain to students that the lines, numbers, and letters are a special code that identifies the product and its price.

If a cashier has an automatic cash register, he or she runs the product code over a flat-surfaced computer. The computer decodes the lines and numbers into a price and then sends the price to the cash register. The cash register automatically keeps a running total of the grocery bill each time a price is entered.

January 20-21:

Computers in Agriculture

Computerized sensors can analyze soil and weather conditions to determine the best crop to grow in a given region. They also can predict physical disasters and figure out the best way to irrigate a field.

January 23-25:

Computers in the Office

Modern, computerized offices have word processors that enable a user to type and edit text quickly; electronic spreadsheets that enable a user to study, chart, and predict profits and losses quickly; database software programs that store and retrieve large amounts of information; and copy machines that make multiple reproductions.

January 28:

Computers in Medicine

Doctors can enter a patient's symptoms into a computer to get a list of possible diseases. Once the patient is diagnosed, the computer can report possible treatments. Computers in hospitals also keep medical records on patients and can keep an inventory of supplies.

January 31:

Review of Computers in Society

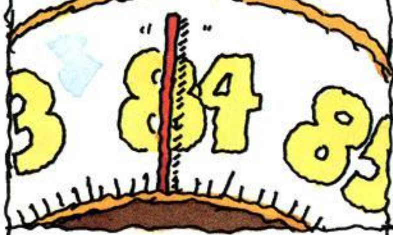
Have Johnny (or Janey) Computer and his or her sidekick, Ed (or Edna) McMicro, work out a list of computer-related questions for each guest on the show. Have one group of volunteers stage commercials for computer equipment or software and another group come up with a skit on computers in society. ■

Lorraine Hopping is assistant editor for *Teaching and Computers.*

ELECTRONIC CALENDAR
HAPPY NEW YEAR!
HI.
HELLO.
JANUAR

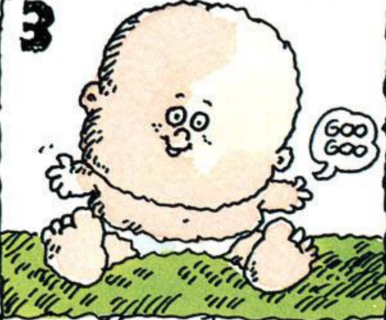
Sunday Monday Tuesday Wednesday

1 **NEW YEAR'S DAY**



2 **DID YOU KNOW?**
Did you know that in January, 1980, more computers were built than babies were born?

3



4 **TRY THIS!**
Find all the computers in your school. Hint: Some computers are hidden inside other machines.

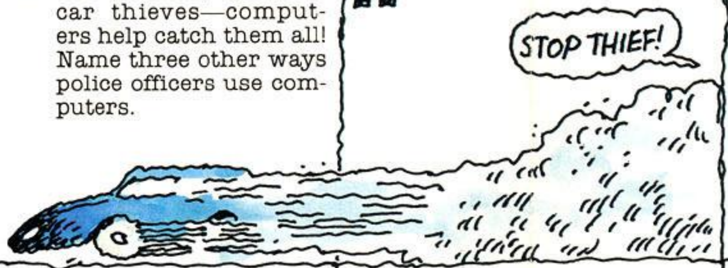
8

I'M TIRED OF PAINTING PICTURES.

9 **WORD DAY: MULTIMEDIA ART**
Artists can program computers to create cartoons and play a symphony. Art made up of pictures, sounds, and words is called **multimedia art**.

10 **QUICK QUIZ**
Tax evaders, speeders, car thieves—computers help catch them all! Name three other ways police officers use computers.

11

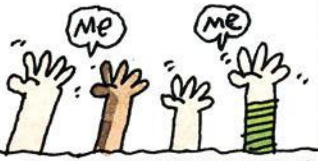


15 **MARTIN LUTHER KING, JR.'S BIRTHDAY**

HAPPY BIRTHDAY!

16 **JOKE TIME**
Q: What do you get when you add a computer to a chicken?
A: A paultry sum.

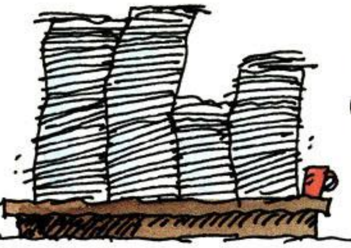
17 **TRY THIS!**
Take a poll: How many of your friends have a computer at home? How do they use it?



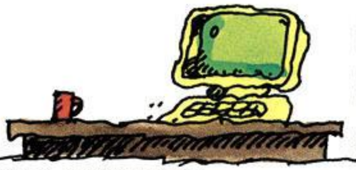
18 **WORD DAY: AUTOMATIC**
Computerized machines at banks let customers take out and put in money, using a plastic card. Machines that work by themselves, without human help, are **automatic** machines.

22

23 **BEFORE COMPUTERS**



24 **AFTER COMPUTERS**



25 **TRY THIS!**
Write a story about a typical day in the life of a secretary 100 years ago. Now write the same story about a day in the life of a secretary today.

29 **FAST FACT**
Ever wonder who turns green traffic lights into red and back again? Well, it's not a who but a what—a computer!

30 **JOKE TIME**
Q: Why did the young electrode run away from home?
A: It wanted to join the circuit.

31 **TRY THIS!**
Be a guest on the Johnny Computer Show! One person plays Johnny Computer, the host. Computer-using guests can include a robot, a programmer, an astronaut, a teacher, and a "whiz kid."

ARE ALL
YOU HAVI
A GOOD T
ON MY SH

Hello.
19
89
A NEW YEAR!

THEME OF THE MONTH: COMPUTERS IN SOCIETY

nesday Thursday Friday Saturday

HIS!
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computers are
inside other
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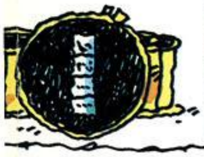


5

6

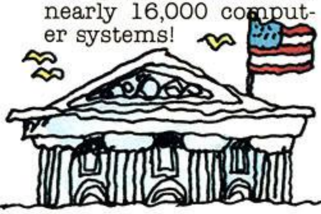
7 **JOKE TIME**

Q: Why did the computer start an exercise program?

A: It wanted to reduce a *bit*.

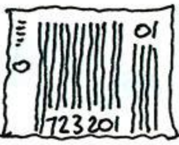
12 **FAST FACT**

In 1950, the U.S. government used two computer systems. Today, the government uses nearly 16,000 computer systems!



13 **QUICK QUIZ**

What is this? Hint: It's something you see every day.



14

DAY: AUTO-
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take out and
money, using a
card. Machines
ork by them-
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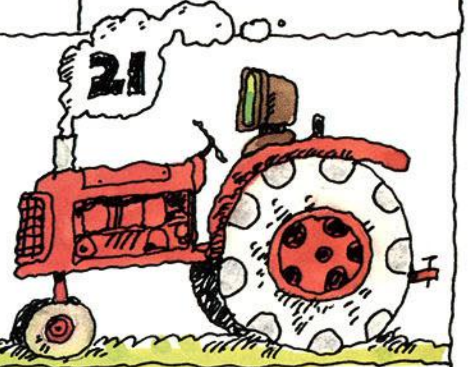
19

20

FAST FACT

Computers don't ride tractors. But they do help the farmers keep track of rain and analyze the soil!

21



HIS!
story about a
day in the life of
tary 100 years
ow write the
ory about a day
fe of a secretary

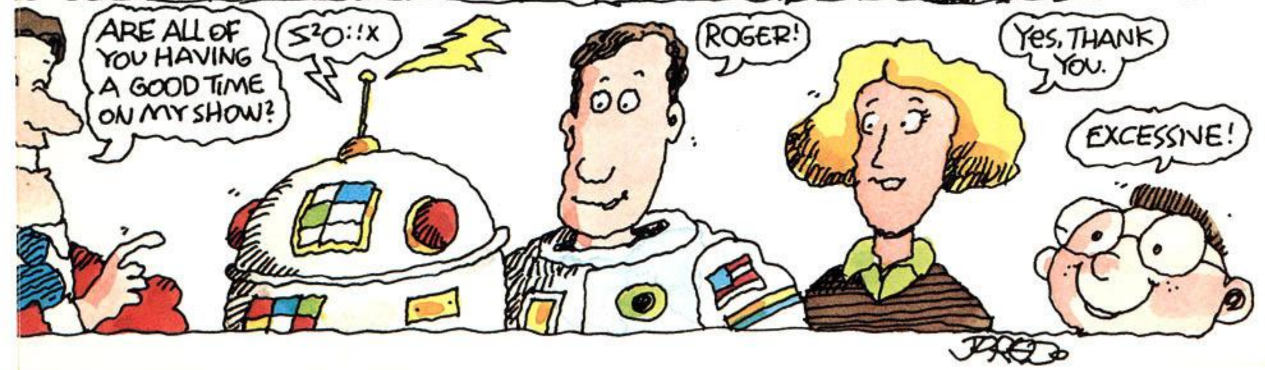
26

27

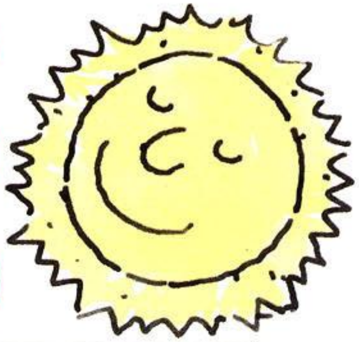
IS THERE A COMPUTER IN THE HOUSE?

28 **DID YOU KNOW?**

Did you know that doctors use computers to find out what's wrong with patients and how to treat them?


ARE ALL OF YOU HAVING A GOOD TIME ON MY SHOW?
$%&!:X
ROGER!
YES, THANK YOU.
EXCESSIVE!

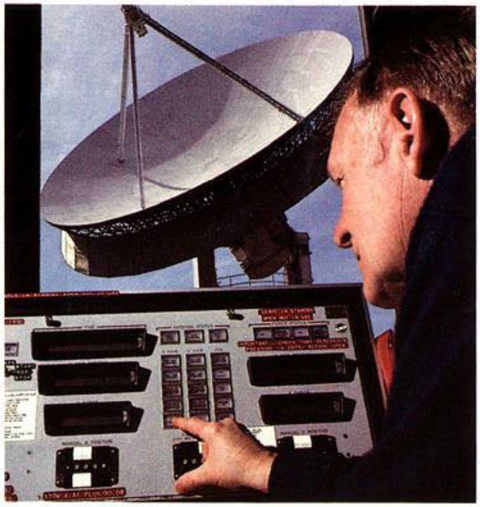
COMPUTERS IN YOUR WORLD



Tony Korody/Sygma

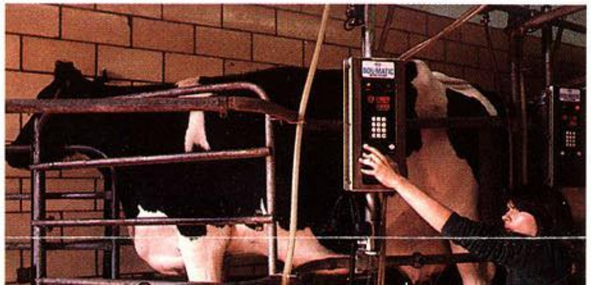
HOME

You can use computers to shop, bank, play games, and work at home.


John Neubauer/Int'l Stock Photo

WEATHER

Computers watch and predict the weather.



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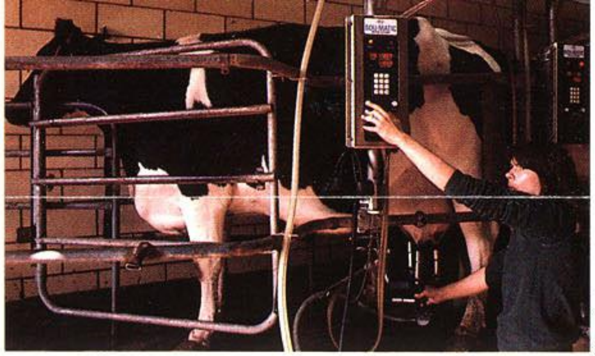
STORE

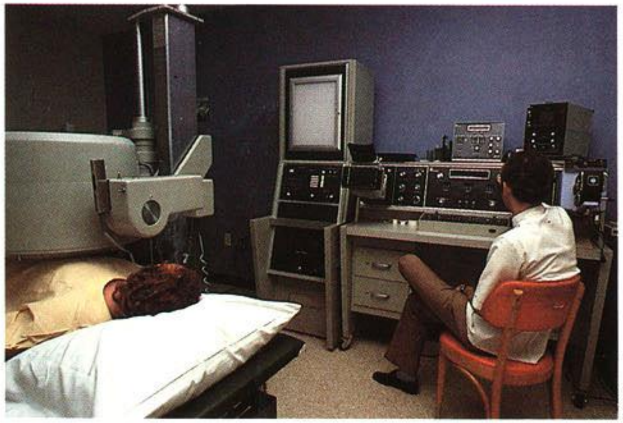
Computers add up the prices of items a customer buys.



Tom Pantages

FARM

Computers record the amount of milk a cow produces.



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HOSPITAL

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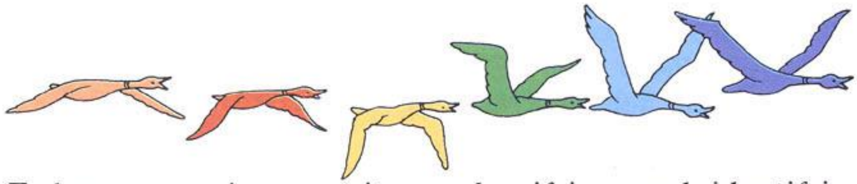
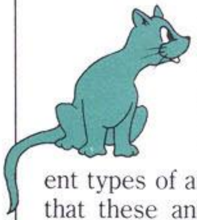
PROGRAM OF THE MONTH

Animal Kingdom

By Lorraine Hopping



Enhance a science unit on classifying and identifying animals with this delightful computer game.



Welcome to *Animal Kingdom*! The January program of the month teaches students that there are many different types of animals in our world and that these animals can be placed in groups according to common traits. It's an excellent addition to any science unit on animals.

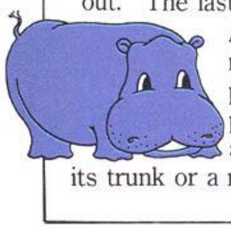
Program Description

In *Animal Kingdom*, players think of an animal. The computer tries to guess that animal by asking yes-and-no questions, such as, "Does the animal live on land?" or "Does the animal have four legs?" Students provide the computer with answers, and the computer either guesses the animal correctly or gives up and asks what the animal is.

Using the Program in Your Science Curriculum

Following are ways to use *Animal Kingdom* in a science unit on animals.

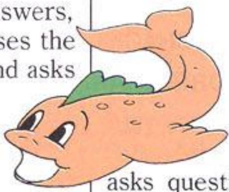
1. Identify a variety of animals. Play a game that will familiarize students with the animals mentioned in the program. The game is called "Animal Says." Similar to "Simon Says," the players must follow your commands—but only if you say "Animal says" before telling players what movement to make. Any player who does not follow these directions is "out." The last person "in," wins.



All movements must mimic an animal in the program. For example, you could mimic an elephant swinging its trunk or a rabbit hopping.

2. Classify animals according to common traits. Explain to students that when scientists study animals, they put them in groups. The groups have very technical names like *phylum, genus, class, order*, and so on. Basically, they are groups that divide animals according to how they look, what they eat, how they act, and where they live.

Write these three categories across the top of the chalkboard: "land animals," "sea animals," "land and sea animals" (*amphibians*). Have students come to the board and write in several animals for each of the three categories. Tell them they have just "classified" animals according to how they live.



In *Animal Kingdom*, the computer uses classifications to guess students' "mystery animals." The computer asks questions that can tell it what animal groups the animal does or does not belong to. Eventually, the computer can narrow the possibilities down to the correct animal. As students run *Animal Kingdom*, have them list some of the classifications used in the program: four legs, size, fins, bark, and so on.

3. Identify animal habitats. A habitat is where an animal lives, such as, in a forest, a field, a pond, or jungle. A good habitat provides an animal with food, water, shelter, and a comfortable climate.

Tape a large sheet of butcher paper on the wall. Let students paint a scene on it that shows basic habitats for the animals mentioned in the program. Next, have them select one of the animals in the program, do research on it, and then make an accurate picture of it. Ask each student to position his or her animal in its appropriate home on the mural.

How to Add Animals to the Program

Animal Kingdom is an example of a "branching program." Branching programs start with a general category, in this case a list of animals, and break that category down into more narrow categories, such as animals with four legs, through a series of yes/no choices. Ultimately, the program narrows the categories into ones that include a single item, such as a pig.

Here's how to extend the *Animal Kingdom* branching program by adding animals.

First, think of an animal not in the program, such as a goat. Then play *Animal Kingdom*, counting the number of questions the computer asks and stopping at the point where the computer guesses wrong.

For a goat, the program takes you to line 480, ending with the fifth question: "Does it give us milk?" The computer guesses a cow, but both goats and cows give milk.

Now, think of a question that sets goats and cows apart, such as, "Does it *moo*?" Program the computer to print the question and ask for the answer by adding the following line:

```
500 PRINT "DOES IT MOO?": INPUT Q6$
```

The number *six* indicates that this is the sixth computer question.

These lines tell the computer to guess an animal:

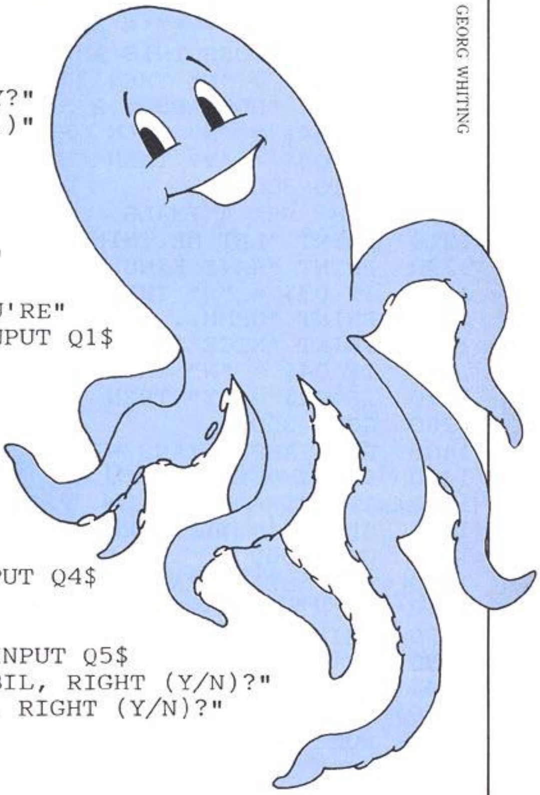
```
510 IF Q6$ = "N" THEN PRINT "I THINK IT'S A GOAT, RIGHT?"
520 IF Q6$ = "Y" THEN PRINT "AHA! A COW! (RIGHT?)"
530 GOTO 3000
```

Run the program to see if the computer can guess a goat. ☐

Lorraine Hopping is assistant editor for *Teaching and Computers*.

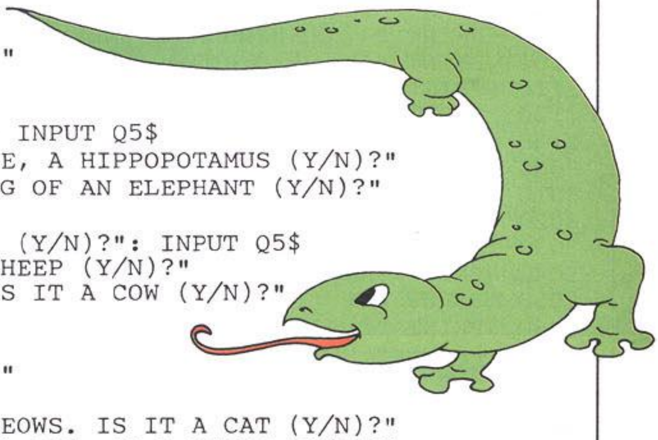
Program Listing for *Animal Kingdom*

This program is for the Apple II Plus and Apple IIe microcomputers. For command conversions for Atari, Commodore, Radio Shack, and Texas Instruments computers see chart, page 68.



GEORG WHITING

```
5  HOME
10  PRINT "   WELCOME TO ANIMAL KINGDOM!"
20  PRINT : PRINT "   DO YOU ALREADY KNOW HOW TO PLAY?"
30  PRINT : PRINT "(TYPE 'Y' OR 'N' AND PRESS RETURN.)"
40  INPUT I$
50  IF I$ = "N" THEN  GOSUB 2000
60  HOME
70  PRINT : PRINT "   THINK OF AN ANIMAL...."
80  PRINT : PRINT "(PRESS RETURN WHEN YOU HAVE ONE.)"
90  INPUT P$
100  PRINT : PRINT "LET'S SEE.... DOES THE ANIMAL YOU'RE"
110  PRINT "THINKING OF LIVE ONLY ON LAND (Y/N)?": INPUT Q1$
120  IF Q1$ = "N" THEN 1000
130  REM  LAND ANIMALS
140  PRINT "I SEE.  DOES THE ANIMAL YOU PICKED"
150  PRINT "WALK ON FOUR LEGS (Y/N)?": INPUT Q2$
160  IF Q2$ = "N" THEN 300
170  PRINT "HMMM.... CAN YOU KEEP THIS ANIMAL IN"
180  PRINT "THE HOUSE AS A PET (Y/N)?": INPUT Q3$
190  IF Q3$ = "N" THEN 400
200  PRINT "DOES THIS PET LIVE IN A CAGE (Y/N)?": INPUT Q4$
210  IF Q4$ = "N" THEN 600
220  PRINT "I'VE ALMOST GOT IT.  DOES THIS PET"
230  PRINT "HAVE LONG EARS AND EAT CARROTS (Y/N)?": INPUT Q5$
240  IF Q5$ = "N" THEN  PRINT "AHA! IT MUST BE A GERBIL, RIGHT (Y/N)?"
250  IF Q5$ = "Y" THEN  PRINT "IT HAS TO BE A RABBIT, RIGHT (Y/N)?"
260  GOTO 3000
300  REM  NON-FOUR-LEGGED ANIMALS
310  PRINT "IS YOUR ANIMAL VERY SMALL AND DOES IT"
320  PRINT "LIKE TO CRAWL ON THE GROUND (Y/N)?": INPUT Q3$
330  IF Q3$ = "N" THEN  PRINT "THEN MAYBE IT FLIES. IS IT A BIRD (Y/N)?": GOTO
     3000
340  PRINT "LET ME SEE.... DOES IT SPIN A WEB (Y/N)?": INPUT Q4$
350  IF Q4$ = "N" THEN  PRINT "I'VE GOT IT! IT'S AN ANT, RIGHT (Y/N)?"
360  IF Q4$ = "Y" THEN  PRINT "I'VE GOT IT! IT'S A SPIDER, RIGHT (Y/N)?"
370  GOTO 3000
400  REM  WILD ANIMALS
410  PRINT "I KNOW--DOES THIS WILD ANIMAL COME"
420  PRINT "FROM AFRICA (Y/N)?": INPUT Q4$
430  IF Q4$ = "N" THEN 480
440  PRINT "AHA! DOES IT HAVE A TRUNK (Y/N)?": INPUT Q5$
450  IF Q5$ = "N" THEN  PRINT "IS IT, BY CHANCE, A HIPPOPOTAMUS (Y/N)?"
460  IF Q5$ = "Y" THEN  PRINT "ARE YOU THINKING OF AN ELEPHANT (Y/N)?"
470  GOTO 3000
480  PRINT "LET'S SEE.... DOES IT GIVE US MILK (Y/N)?": INPUT Q5$
490  IF Q5$ = "N" THEN  PRINT "COULD IT BE A SHEEP (Y/N)?"
500  IF Q5$ = "Y" THEN  PRINT "LET'S SEE.... IS IT A COW (Y/N)?"
510  GOTO 3000
600  REM  PETS NOT IN A CAGE
610  PRINT "DOES THIS PET BARK A LOT AND SCARE"
620  PRINT "AWAY ROBBERS (Y/N)?": INPUT Q4$
630  IF Q4$ = "N" THEN  PRINT "THEN MAYBE IT MEOWS. IS IT A CAT (Y/N)?"
640  IF Q4$ = "Y" THEN  PRINT "IT'S GOT TO BE A DOG. AM I RIGHT (Y/N)?"
650  GOTO 3000
1000  REM  SEA/AMPHIBIOUS ANIMALS
```

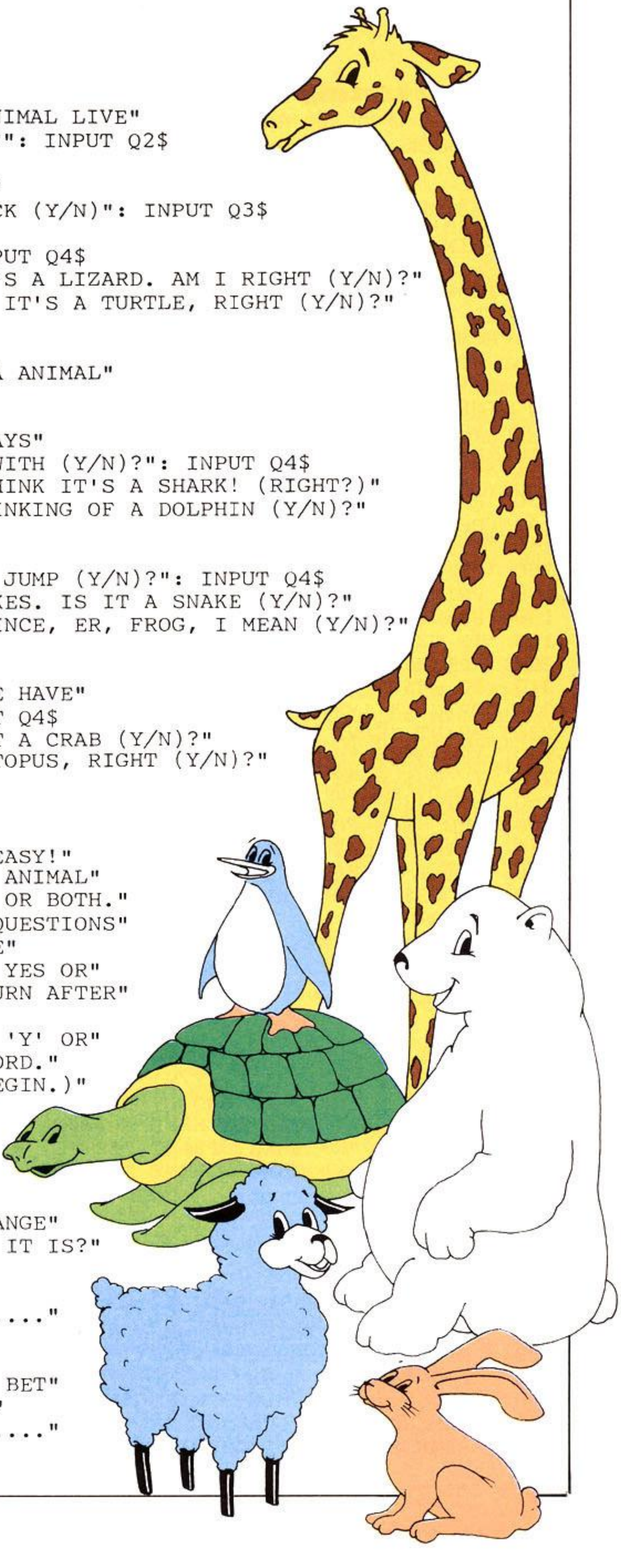


(continued on page 48)

PROGRAM OF THE MONTH

(continued from page 47)

```
1010  PRINT "HERE'S A GOOD ONE! CAN THIS ANIMAL LIVE"
1020  PRINT "BOTH ON LAND AND ON SEA (Y/N)?": INPUT Q2$
1030  IF Q2$ = "N" THEN 1200
1040  PRINT "AHA! IT'S AN AMPHIBIAN, THEN."
1050  PRINT "DOES THIS AMPHIBIAN HAVE A NECK (Y/N)": INPUT Q3$
1060  IF Q3$ = "N" THEN 1400
1070  PRINT "HOW ABOUT A SHELL (Y/N)?": INPUT Q4$
1080  IF Q4$ = "N" THEN  PRINT "I THINK IT'S A LIZARD. AM I RIGHT (Y/N)?"
1090  IF Q4$ = "Y" THEN  PRINT "OF COURSE! IT'S A TURTLE, RIGHT (Y/N)?"
1100  GOTO 3000
1200  REM  SEA ANIMALS
1210  PRINT "LET ME THINK.... DOES THIS SEA ANIMAL"
1220  PRINT "HAVE FINS (Y/N)?": INPUT Q3$
1230  IF Q3$ = "N" THEN 1500
1240  PRINT "UMMM.... IS THIS CREATURE ALWAYS"
1250  PRINT "NICE TO HUMANS AND FUN TO BE WITH (Y/N)?": INPUT Q4$
1260  IF Q4$ = "N" THEN  PRINT "YIKES! I THINK IT'S A SHARK! (RIGHT?)"
1270  IF Q4$ = "Y" THEN  PRINT "ARE YOU THINKING OF A DOLPHIN (Y/N)?"
1280  GOTO 3000
1400  REM  AMPHIBIANS WITHOUT NECKS
1410  PRINT "LET'S SEE. CAN THIS AMPHIBIAN JUMP (Y/N)?": INPUT Q4$
1420  IF Q4$ = "N" THEN  PRINT "I LIKE SNAKES. IS IT A SNAKE (Y/N)?"
1430  IF Q4$ = "Y" THEN  PRINT "IS IT A PRINCE, ER, FROG, I MEAN (Y/N)?"
1440  GOTO 3000
1500  REM  SEA CREATURE WITHOUT FINS
1510  PRINT "I KNOW--DOES THIS SEA CREATURE HAVE"
1520  PRINT "EIGHT TENTACLES (Y/N)?": INPUT Q4$
1530  IF Q4$ = "N" THEN  PRINT "OUCH! IS IT A CRAB (Y/N)?"
1540  IF Q4$ = "Y" THEN  PRINT "AHA! AN OCTOPUS, RIGHT (Y/N)?"
1550  GOTO 3000
2000  HOME
2005  REM  INSTRUCTIONS
2010  PRINT "    PLAYING ANIMAL KINGDOM IS EASY!"
2020  PRINT "JUST THINK OF AN ANIMAL.  THE ANIMAL"
2030  PRINT "CAN LIVE ON LAND, IN THE SEA, OR BOTH."
2040  PRINT "    THE COMPUTER WILL ASK YOU QUESTIONS"
2050  PRINT "ABOUT YOUR ANIMAL.  ANSWER THE"
2060  PRINT "QUESTIONS BY PRESSING 'Y' FOR YES OR"
2070  PRINT "'N' FOR NO.  ALWAYS PRESS RETURN AFTER"
2080  PRINT "YOU TYPE IN YOUR ANSWER."
2090  PRINT "    REMEMBER TO ONLY TYPE IN A 'Y' OR"
2100  PRINT "AN 'N' INSTEAD OF THE WHOLE WORD."
2110  PRINT : PRINT "    (PRESS RETURN TO BEGIN.)"
2120  INPUT P$
2130  RETURN
3000  INPUT A$
3010  IF A$ = "Y" THEN  GOTO 4000
3020  HOME
3030  PRINT "    BOY, THIS MUST BE SOME STRANGE"
3040  PRINT "ANIMAL!  CAN YOU TELL ME WHAT IT IS?"
3050  INPUT AN$
3060  PRINT "    OF COURSE!  A(N) ";AN$;"!"
3070  PRINT "    THANKS!  SEE YOU NEXT TIME...."
3080  END
4000  HOME
4010  PRINT "    I GOT IT!  I GOT IT!  I'LL BET"
4020  PRINT "YOU THOUGHT I'D NEVER GET IT!"
4030  PRINT "    I HOPE YOU PLAY AGAIN SOON...."
4040  END
```



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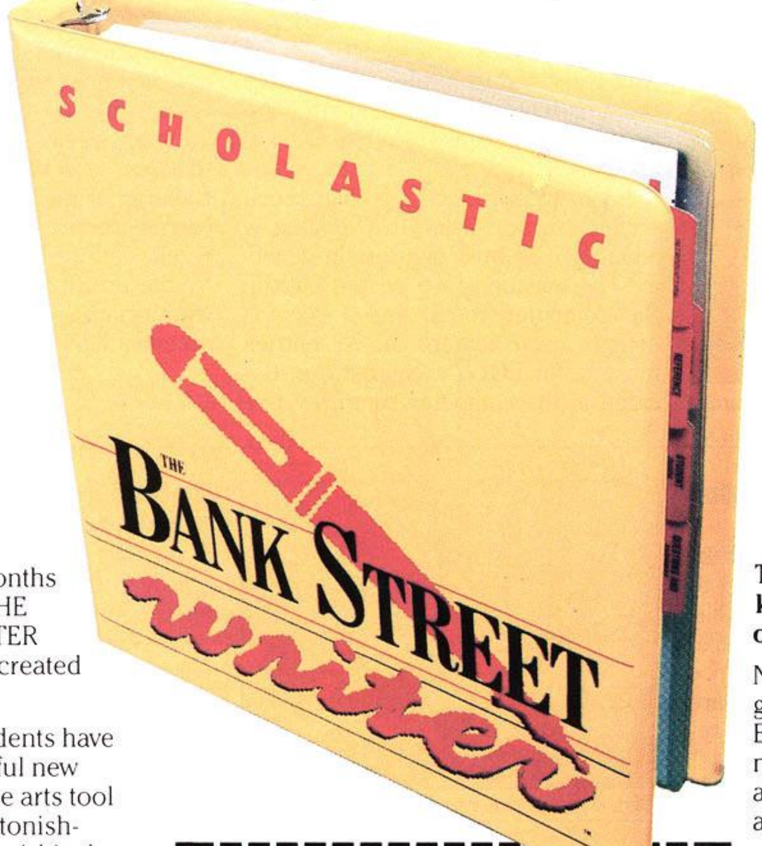

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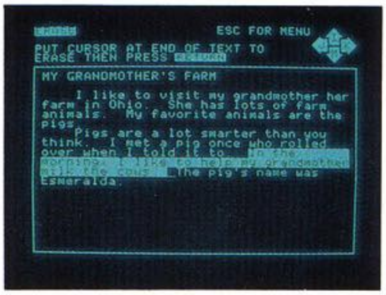

```
ERASE                       ESC FOR MENU
PUT CURSOR AT END OF TEXT TO
ERASE THEN PRESS RETURN
MY GRANDMOTHER'S FARM
     I like to visit my grandmother her
farm in Ohio.  She has lots of farm
animals.  My favorite animals are the
pigs.
     Pigs are a lot smarter than you
think.  I met a pig once who rolled
over when I told it to.  In the
morning, I like to help my grandmother
milk the cows.  The pig's name was
Esmeralda.
```

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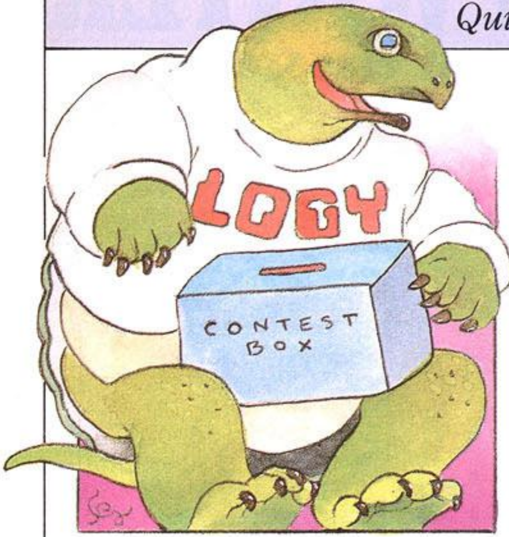
MICRO IDEAS

Quick Computer Tips and Activities



Mascot "LOGY" conducts a weekly contest.

Conduct a Weekly Computer Contest

Everyone loves a contest! That's why I decided to have our computer room mascot LOGY (named after the language he speaks) run a weekly contest.

Each week LOGY, a big green stuffed turtle, asks five questions about LOGO or computers in general. The questions are posted outside the computer room, and a copy is sent to each homeroom. All entries must be in LOGY's contest box (located in the computer room) by Friday of each week.

I then have the weekend to review entries and get out the flyer describing next week's contest. Included on the flyer are the names of LOGY's Experts of the Week (all those with correct entries from the previous week) and the winner's name (drawn by the principal from the correct entries group). The winner each week receives his or her own blank disk. □

Bonnie Klein
Rochester, NY

Designate Special Disks For Beginners

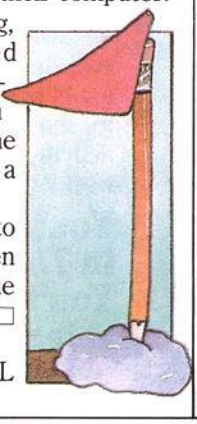
We designate a special box of disks for students who are first learning to boot disks. The disks are all public domain software programs and therefore, easily replaced. This practice keeps damage to expensive software down, while our computer usage remains high! □

Joan M. Lippman
Cupertino, CA

Wave a Help Flag

When students are working independently in our computer lab, I like to wander from computer to computer to answer questions and see how the students are doing.

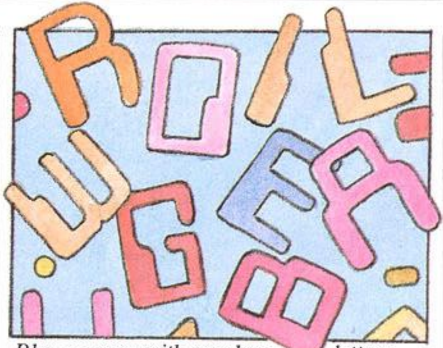
I tell the kids that I can only help one person or group at a time though, so if they have a question while I am busy, they are to fly their red flag. As soon as I am free and see the flag, I proceed to their computer.



To make a red flag, children glue a red construction paper triangle near the top of a pencil. They stick the pencil point down in a small ball of clay.

When they need to fly the flag, they fasten the clay ball onto the top of the computer. □

Sara Stone
Wheaton, IL



Play a game with random letters.

Generate Random Letters on Computer

The program listed below generates random groups of letters on the Apple. Have students make a list of all the words and names that appear in these random groups in a five-minute period. If students need to stop the computer at any time to check a group of letters more carefully, tell them to press any key; to make it start up again, they press any key.

```
10 HOME
20 A = RND (1):A = 100 * A
30 IF A>90 THEN 20
40 IF A<65 THEN 20
50 PRINT CHR$ (A);
60 B = PEEK ( - 16384): IF B>127 THEN 80
70 GOTO 20
80 POKE 49168,0:B = PEEK ( -16384): IF B>127 THEN POKE 49168,0: GOTO 20
90 GOTO 80
```

□

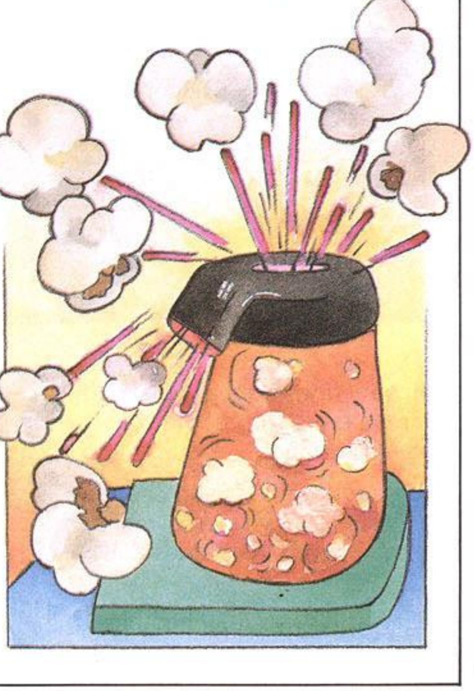
Michael Milone
Honesdale, PA

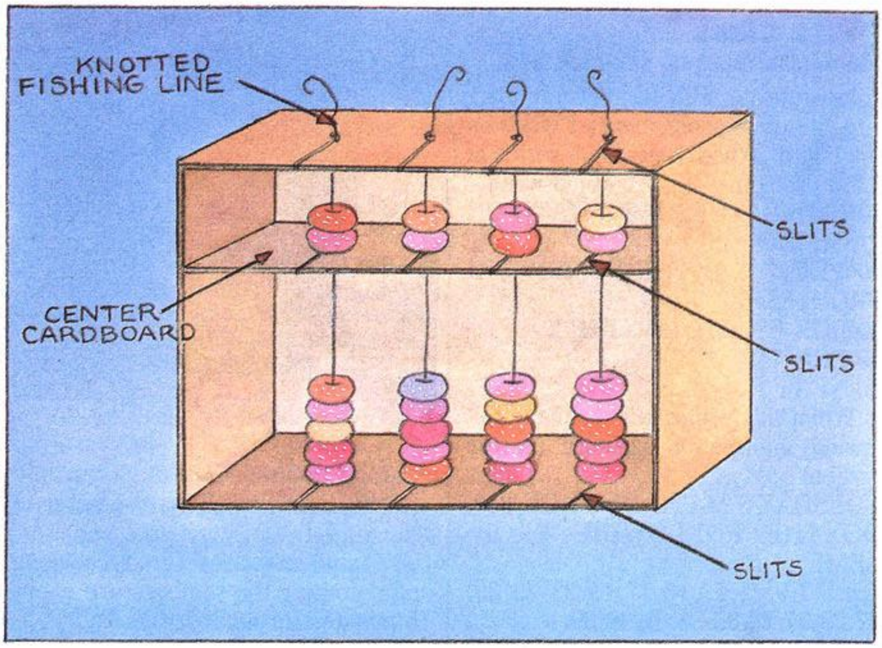
Teach Processing With a Popcorn Party

If your kids are having trouble understanding the computer concepts of input, output, and process, bring a corn popper to school and conduct a popcorn party.

As you pour the kernels into the popper, tell students you are "inputing" the corn into the machine. The heat and popping movement represent the "process" of turning kernels into popcorn. The popcorn is the "output." □

Sonia Webster
Baltimore, MD





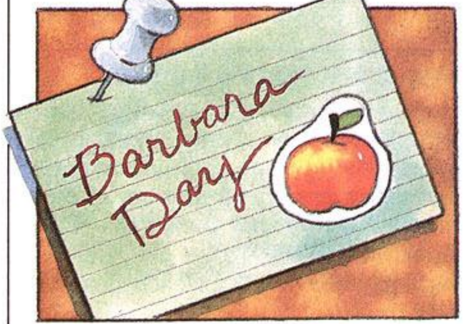
Make an abacus with strings of Froot Loops or Cheerios.

Give Computer Users Wall-to-Wall Coverage

When a child, parent, or staff member at our school demonstrates proficiency in using a computer, we publicize the fact. The able computer user gets his or her name printed on a green card (2″ x 3″) with either a turtle sticker (symbolizing an Atari user) or an apple sticker (symbolizing an Apple user) on it.

The cards are displayed on a bulletin board in the media center. Kids and adults alike love to point out their names to others. ☐

Joan M. Lippman
Cupertino, CA



Sticker designating an Apple user.

Conduct a Scavenger Hunt

A good way to make students aware of the many ways computers are used in their world is to ask them to bring in at least five items related to computers that they could find in their home.

Items might include a receipt from an automated bank teller, computer-generated letters, an expired fare card for computer-controlled public transportation, an expired credit card with magnetic tape on it, a computer-generated ticket stub, a digital watch, receipt from an automatic cash register, a computer-printed photo, an alphanumeric code from a grocery product, or an album cover from computer-generated music.

Turn the assignment into a real scavenger hunt by awarding a prize to the child who brings in the most computer items. Students might tell you that there are a lot of items they would like to bring in but they are too large or valuable. Give partial credit for these items, as well. ☐

Amy Green
Iowa City, IA

Make an Abacus

One of the earliest calculating devices was the abacus. Students can make their own abacus with these materials: a gift box, fishing line, Cheerios (or other cereal with center holes), scissors, and a piece of cardboard.

Follow these simple steps:

1. Cut four matching slits along the two longer edges of the box. Make the slits half as deep as the edges. (See illustration.)
2. Cut a piece of cardboard so that it fits lengthwise in the box. On one edge of the cardboard, cut four slits that will correspond to the slits on the box. (See illustration.)
3. Place the cardboard in the box, about two-thirds of the way from one of the long sides.
4. Knot a piece of fishing line and string it through the first slit. String two Cheerios on the fishing line and place them above cardboard insert.
5. String the line through the insert and then string five Cheerios on the line.
6. String the line through the bottom slit. Knot the line and cut it.
7. String three more rows of Cheerios in the same way.

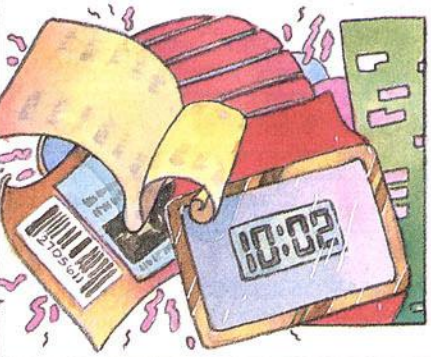
This is a Chinese abacus. Other versions may differ slightly.

Ask two students to do research on the Chinese abacus and to teach the class how to add and subtract on one. (Most encyclopedias contain adequate information.) ☐

Dan McIntyre
Columbus, OH

(continued on page 52)

Scavenge for computer items.



SUSAN GABER

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MICRO IDEAS

(continued from page 51)

Write Class Assignments in BASIC

I incorporate BASIC programming into the class assignments I write on the board. When assigning a series of math problems; e.g., I would write:

```
10 PRINT "TUESDAY'S MATH ON PAGE 245"
20 PRINT "DO THE FOLLOWING PROBLEMS:"
30 FOR P=1 TO 40 STEP 2
40 PRINT P
50 NEXT P
```

When this program is run, the following information appears on the screen:

```
TUESDAY'S MATH ON PAGE 245
DO THE FOLLOWING PROBLEMS:
1,3,5,7,9,11,13,15,17,19,21,23,25,
27,29,31,33,35,36,37,38,39.
```

Children learn to decipher the message in the program without having to run it. They rapidly grasp that FOR P=1 TO 40 means problems 1 through 40 and that STEP 2 means to count by twos, leaving out every other problem number. They enjoy requesting that the STEP command be changed to STEP 10, STEP 20, or, best of all, STEP 40.

Many kids have passed in their papers with their own miniprograms written to me. Here's a favorite:

```
10 INPUT "DID I GET A GOOD GRADE ON THIS? (Y or N)"; A$
20 IF A$ = "N" THEN 50
30 PRINT "WHERE'S MY SMELLY STICKER?"
40 END
50 PRINT "I BET I LOSE THIS PAPER ON THE WAY HOME."
```

When an assignment is written on the board, children now get excited about deciphering the BASIC message. ☐

J. Craig Dickinson
Orono, ME

Take Your Computer's Temperature

What's your computer's temperature?

You can teach kids how to read a thermometer, and sneak in a little practice on making a graph as well with this unusual activity.

First, tape a small thermometer to the top of the computer monitor. Have students take turns checking and recording the temperature every 15 minutes throughout the day.

Graph the results. Ask students to hypothesize about any dips or rises in temperature. (*For example, sunlight beating on the machine or heavy machine use could be responsible for temperature rises.*)

If your computer has removable interface or memory cards, find out if the computer's temperature changes when you insert or remove the cards. (*Additional electricity used by the cards may give off enough heat to raise the temperature in the thermometer by several degrees.*)

Don't allow children to handle the cards, and be sure to follow the instructions in your user's manual for handling the cards yourself, as there is a slight danger of electrical shock if treated carelessly. ☐

Michael Milone
Honesdale, PA

Send Us Micro Ideas

Do you have computer activities, bulletin boards, or management tips you'd like to share with computer-using teachers? Send them to Micro Ideas, *Teaching and Computers*, 730 Broadway, New York, NY 10003. We'll pay $15 to $30 for each idea we publish. ☐

(continued on page 54)

ENTER . . . *Computer EdGame* CHALLENGE

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(See reverse side for more details.)

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☐ I'm interested in the Computer EdGame winning entries disks to be offered at cost. Send me an order form.

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Just design an educational game based on a variety of elementary or secondary academic subject areas. Author the software on any one of the most popular microcomputers used in schools today.

Act now! Fill out and mail the attached card for more details. Remember, every entrant will receive two free Verbatim Datalife® minidisks.

AND, most important—this is a non-profit endeavor. Winning programs will be offered to educators at cost.

Contest opens November 1 and closes April 30, 1984. For details, call (212) 505-3485.

The Computer EdGame Challenge is sponsored by ***Verbatim Corporation*** *in association with Scholastic Inc., publishers of Electronic Learning and Teaching and Computers.*

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The two major contest divisions are Elementary (K-8) and Secondary (9-12). Both divisions have the following categories:

Elementary: Mathematics, Language Arts, Sciences, Health/Nutrition, Geography/Social Studies, Miscellaneous.

Secondary: Mathematics, Language Arts, Sciences, Health/Nutrition, Geography/Social Studies, Miscellaneous.

Judging will be based on originality, educational merit, and entertainment value. **Only games of a non-violent nature will be considered.**

It's simple to enter, **FREE,** and big prizes can be won.

PRIZES: A total of 12 prizes will be awarded, each worth over $1,000.

Each winner will receive an ATARI 800XL Home Computer with an ATARI 1050 disk drive and an AMDEK Color-I Plus monitor.

BONUS: If your program is selected you'll earn **royalties** on specially produced diskettes featuring the best entries submitted in the Computer EdGame Challenge.

The Verbatim Computer EdGame Challenge is a non-profit endeavor sponsored by **Verbatim Corporation** in cooperation with Scholastic Inc., a leading educational publisher.

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CALLING ALL WRITERS!

TEACHING AND COMPUTERS invites you to submit articles on your work with students and computers. We are particularly interested in these topics:

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"Your programs are some of the best I've ever seen."
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City ____________ State ____________ Zip ____________ **TC**

MICRO IDEAS

(continued from page 52)

Keep Track of Your Manuals

A place for every manual and every manual in its place. That's the philosophy of our computer center, now that we have solved the problem of the missing computer manuals.

In our school's computer center, computer users found themselves spending valuable time looking for manuals when they should have been using them. To solve this problem, we tied a ribbon to each manual and then attached the ribbon to a coat hook that was affixed to the wall.

The ribbon is simple to attach to spiral manuals. Just slip it through the top few spirals. For manuals with other types of binding, punch holes in each page, about ¼″ from the upper lefthand corner. Pass a spiral ring through the holes and tie the ribbon to both the ring and the hook. Your manuals will now always be within easy reach. ☐

Carol Pike
Tulsa, OK

Compare the Computer and Human Brains

Here's a bulletin board idea to reinforce the difference between the computer's ability to calculate and a human's ability to reason.

In the center of the board, post in large letters: "Which of these decisions could a computer handle?" Then scatter questions, such as: "Which color car looks best?"; "Which computer programs are more fun—yours or someone else's?" and "What is the date of today?"

Next to each question tack a folded piece of paper with "Yes" or "No" (in answer to the headline on the bulletin board) written inside.

Encourage children to post other questions on the board. ☐

Sandra Markle
Dunwoody, GA

LESSON FOUR: EXPLORING CIRCLES

By Steve Tipps and Tom Lough

Now that children have mastered the Logo commands for moving the turtle forward, back, left, and right (lessons one to three), it's time for them to learn how to make shapes. In lesson four of Logo Notebook, students experiment with making circles. In the process, they learn REPEAT, a command used for executing commands over and over.

Circles are particularly interesting to explore because of the endless combinations of Logo commands and numbers that can produce them.

As students complete the following activities, they will encounter many interesting patterns and useful command sequences. Have them keep a notebook of their discoveries, recording the commands and their results. Write on the cover of the notebook, "Circular File."

Each entry should have a name, such as HALFCIRCLE or SUN.

One final note for Apple Logo users: although Apple Logo comes with several built-in procedures for making circles (CIRCLEL, CIRCLER, ARCLEFT, and ARCRIGHT, for example), students will gain a better understanding of how circles are made by creating their own circle procedures. We suggest that you introduce these built-in commands only after students have had a chance to do some exploring on their own.

1. Walk-a-Round

Objective: Students measure the circumference of a circle on the floor using FORWARD, BACK, RIGHT, and LEFT commands.

Activity: Use masking tape or chalk to make a circle slightly smaller than the room. Have students line up, single file, and walk around the circle.

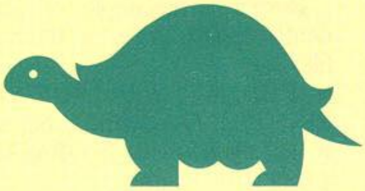
After a few revolutions, tell students to "move like the turtle" while they go around the circle. Remind them that, because the turtle cannot move and turn at the same time, they must divide their steps into two parts: a step and a turn.

Ask students how many normal-size steps it takes to complete one revolution. Then ask them how many giant steps, baby steps, and heel-to-toe steps it takes to go around once.

Make sure students write the results of their circle experiment in their circular file. Compare students' results and post them on a large chart. Point out that, although the size of the circle is constant, the number of steps required to walk its circumference changes according to the size of the step (or the size of the shoe for the heel-to-toe exercise).

Have student partners walk around the circle, one going forward and the other backward. Point out that, although they are going around the same circle, they are turning in different directions.

Have one student go forward and clockwise around the circle and the



REA ACKERMAN

other go forward and counterclockwise. Compare the direction of their turn commands. *(The clockwise walker turns right while the counterclockwise walker turns left.)* Now try backward and clockwise and forward and counterclockwise. *(They both turn right.)*

Extension: (1) Compare steps needed to walk around a series of concentric circles. (2) Draw a figure eight on the floor using chalk. Have students walk around the figure eight using Logo commands. At what point do they change direction? *(When they switch from one circle to the other.)* (3) Have students explore other, more complicated, circle designs such as spirals or overlapping and repeating circles.

2. Turtle Round-Up

Objective: Students form circles on the Logo screen using the REPEAT, FORWARD, BACK, RIGHT, and LEFT commands.

Activity: Students can make circles on the Logo screen by following the same step-turn-step pattern used in the previous activity.

Have students type into the computer FORWARD 1 RIGHT 1 several times. They should see a very small arc.

Now have them press CTRL-P (MIT and Commodore versions) or CTRL-Y (Apple version) to recall the command without having to retype it. (TI Logo does not have a similar recall command.) By recalling the line repeatedly, students should be able to complete more of the circle.

After making a full circle this way, students will appreciate the usefulness of the REPEAT command.

Write the following command sequence on the board:

```
REPEAT 100 [FORWARD 1 RIGHT
1]
```

Explain that the commands in the brackets tell the turtle what to do. The REPEAT command tells the turtle how many times to do it. In this example, the turtle would go forward one turtle step and then turn right one degree 100 times.

Give students ample opportunity to try different numbers after the REPEAT command. (Remind them to record all the commands and results in their circular files.) They should eventually discover that REPEAT 360 is the right number for making a complete circle. (Note: To make sure the circle is complete, type in HIDETURTLE for a clearer view.)

Extension: Challenge students to find the right number after REPEAT for a half circle, quarter circle, and eighth of a circle.

3. More Turtle Circles

Objective: Students make circles of different sizes on the Logo screen.

Activity: Remind students of the lesson they learned in the first activity: that circles of the same size can be measured using different-sized steps.

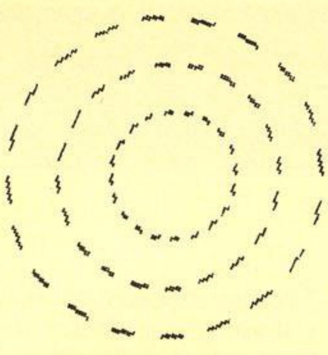
Explain that the same is true of circles made on the computer. REPEAT 360 [FORWARD 1 RIGHT 1] is only one way to make a circle.

Use the comparison chart from the first activity to point out that, with bigger steps, students needed less steps and sharper turns to walk around the circle. In Logo, bigger forward commands mean less turtle steps and bigger-degree turns. Taking bigger steps (both turtle and human) also requires less time to go around the circle.

Have students experiment with various values after REPEAT, FORWARD, and RIGHT in the command sequence for making circles. Also suggest they try substituting BACK and LEFT for FORWARD and RIGHT. Have them record their observations in their circular file.

Here's an example of what students might write in their circular file:

- REPEAT 360 [FORWARD 1 RIGHT 1]: Good circle, but slow.
- REPEAT 36 [FORWARD 10 LEFT 10]: Faster.



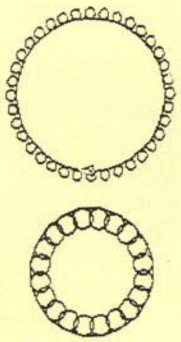
Challenge students to make dotted and colorful concentric circles like these.

- REPEAT 10 [FORWARD 20 RIGHT 3]: Big arc.
- REPEAT 20 [FORWARD 5 RIGHT 20]: Goes around more than once.
- REPEAT 13 [FORWARD 6 LEFT 30]: Needs fewer repeats.
- REPEAT 15 [BACK 3 LEFT 22]: Needs more repeats.
- REPEAT 4 [FORWARD 40 RIGHT 50]: Makes half a circle.

Through trial and error, students will discover different command sequences for circles and parts of circles. Post the most interesting patterns and circles with their commands on a bulletin board.

Extension: (1) Have students experiment with making different colored circles by setting the pen color before each command sequence. To make a blue circle, for example, students would type in PC 5 (MIT Logo), SC 4 (TI Logo), or SETPC 5 (Apple Logo) and then type in the commands for a circle. To change colors, students type the pen color command followed by the appropriate number. (2) Challenge students to make a circle with a dotted outline by entering a PENUP command before and a PENDOWN command after the FORWARD command. (3) Ask students what command sequence draws a circle the fastest, the smallest, and the largest. (4) Challenge students to make a set of concentric circles, each a different color, and a figure eight.

4. Repeat Repeat



Curly circles made using two REPEAT commands.

Objective: Students use the REPEAT command to make more intricate designs.

Activity: Write the following command sequence on the board:

```
REPEAT 12 [FD 2 LT 30]
```

Remind students that the turtle repeats the commands inside the brackets 12 times.

Ask students what they think would happen if you put another REPEAT command inside the brackets. Write the following command on the board:

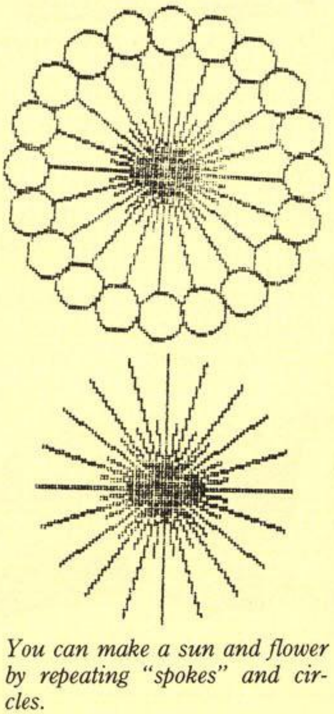
```
REPEAT 20 [FD 10 RT 10 REPEAT 12 [FD 2 LT 30]
```

Have students enter the commands into the computer to see what happens. The result should be a curly circle like the one in the illustration.

Explain that the turtle repeats the FD 2 LT 30 sequence 12 times to make a small circle and then repeats all the commands in the brackets 20 times to make a large circle.

Tell students to replace LT 30 with RT 30 and see what happens. *(The small circles should appear inside the large circle.)*

5. Shady Circles



You can make a sun and flower by repeating "spokes" and circles.

Objective: Students learn to make solid circles on the Logo screen.

Activity: Draw the outline of a circle on the board. Ask children how they would fill in the circle to make a solid shape. They might suggest rubbing the chalk from top to bottom, left to right, or any which way. Ask student volunteers to give Logo commands for one of these methods.

When the volunteers have shown that the commands are long and involved, draw a turtle in the middle of the circle. Ask students again how the turtle might fill the inside of the circle. As a hint, tell them to think about bicycle spokes.

Fill in the circle by moving the turtle to the edge of the circle and back to the center, and then turning it a little to the right or left. Repeat this procedure several times until the circle is filled.

Explain that the same procedure can be done on the computer using only one sequence of commands! Write the following command on the board:

```
REPEAT 360 [FD 30 BK 30 RT 1]
```

Remind students that the turtle goes forward 30 paces, back 30 paces, and turns right one degree 360 times.

Allow students time to experiment with this command sequence on the computer, changing the distance, degree of turn, and number of repeats.

Extension: (1) Have students set the pen color to white and the background to blue to make a snow scene complete with snowflakes of different sizes and a snowman. (2) Challenge students to make a sun by varying the lengths of the spokes. Have them put circles on the ends of the spokes to make a flower.

Until next time, FORWARD 100!

Steve Tipps is assistant professor of education at the University of Virginia and ***Tom Lough*** is editor of the *National Logo Exchange* newsletter in Charlottesville, VA. ■

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Now you can hold a word processor in your hand. Microwriter, the world's smallest word processor, has a unique five-finger keyboard, a 16-character display window, and 8K of memory.

The user forms the shapes of letters by pressing up to six keys with the fingertips of one hand. Various combinations of the keys produce upper and lower case letters, numerals, and punctuation symbols. You can store text on a microcomputer disk or plug it into a printer or electronic typewriter to see your copy.

Microwriter Inc. is currently working on a school version of Microwriter that plugs into a computer and allows up to four students to enter text at once. The U.S. school version will be compatible with the Commodore 64 and other computers.

Price: $499 for independent version; under $100 for school version. Contact: Microwriter Inc., 17 East 71 St., New York, NY 10021; 212/288-8863.

Powerpad Replaces Keyboard

Children who can't type yet will love this handheld electronic pad that plugs into Commodore, Atari, Apple, and IBM computers. Kids draw or press on the pad with their fingers to create images that appear on the monitor.

Powerpad is about the size of a record album. It performs different functions depending on the software you use with it. Each software program comes with a corresponding overlay for the powerpad. For example, the overlay for *Micro Maestro* shows a music scale and keys for each note. Kids press the keys to create sounds. The software library includes programs for visual arts, mathematics, science, language arts, and social studies.

Price: $99.95 for Powerpad; $24.95-$49.95 for software. Contact: Chalk Board, Inc., 3772 Pleasantdale Rd., Atlanta, GA 30340.

Computer Cozies

Do you have trouble keeping your school computers free of chalk dust? Protect your computer and peripherals with these handy covers. Handmade of a washable cotton-polyester blend, the covers can be ordered in different sizes to fit any computer or component. They're available in six colors.

Price: $15-$24 single component; $50 set. Contact: Covers A Lot, P.O. Box 369, La Honda, CA 94020.

Basic Computer Curriculum

COMPUTERVENTURES 1
COMPUTERVENTURES-1
A BASIC
Computer Curriculum for Beginners

Computerventures-1 is a computer literacy program for Apple and TRS-80 computers in a plastic storage case. It consists of eight self-instructional manuals that allow students in fourth grade and up to learn BASIC programming at their own pace. Students practice lessons on the computer using their own disks.

The Deluxe Program also includes 96 student disk labels, 30 award certificates, six posters, an instructor's guide, a graphics disk, and grids for plotting graphics.

Price: $89.95 for Computerventures-1; *$175 for Deluxe Program. Contact: EBSCO Curriculum Materials, Box 486, Birmingham, AL 35202.* ■

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SOFTWARE SHOWCASE

Software Recommended For Teachers By Teachers

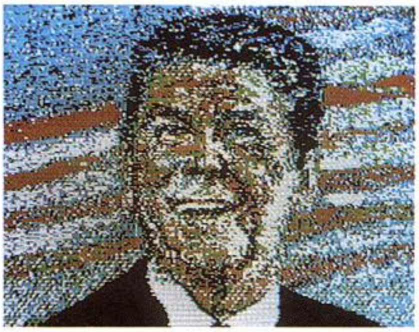
Meet the Presidents

Computer: *Apple*
Topic: *Social Studies*
Level: *Grades 3-8*

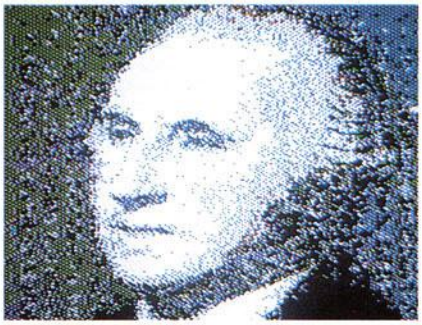
Bay of Pigs failure.
First live TV press conference.
First man in space.

As these clues flash on the screen, a graphic portrait of John F. Kennedy unfolds. Players try to identify the president before the computer reveals his entire portrait and name. A correct answer means the opening bars of "Hail to the Chief" will be played.

In *Meet the Presidents*, a similar sequence is shown for every president of the United States. Score is based on the time that a player takes to guess the presidents' names.



A portrait of Ronald Reagan.



Identifying George Washington from clues in Meet the Presidents.

Teachers can change the clues used to identify each president. This feature allows teachers to model the program to fit a particular unit or class. Several teachers could share the four-disk program because each disk covers a different historical period. As a supplemental activity, I ask students to think of eight new clues that will identify any president.

Type of Software: Disk
Price: $39.95
Policy: $20 backup; 30-day preview
Source: Versa Computing, Inc., 3541 Old Conejo Rd., Suite 104, Newbury Park, CA 91320; 805/498-1956. ☐

Ann Dana
Microcomputer Consultant
Hinsdale Junior High School
Hinsdale, IL

Student Word Study

Computer: *Apple*
Topic: *Language Arts*
Level: *Grades 3-6*

Student Word Study is a drill and practice program with a new twist—the students create their own tests. Students enter lists of words and sentences using those words. Then the sentences are presented to the student with a blank where the word should be. The student must recall the word based on the context of the sentence and type it in correctly.

The teacher mode allows the teacher to create files for 40 students. It also lets teachers list students' incorrect spellings, view or print out students' final test scores, or update word lists. The program could be used for weekly spelling lists and science, social studies, and reading vocabulary. It could also be used to teach foreign languages.

Type of Software: Disk
Price: $29.95
Policy: $10 backup; 30-day preview
Source: Hartley Courseware, Inc., P.O. Box 431, Dimondale, MI 48821; 616/942-8987. ☐

Sue Ridgley
Teacher
Macon Grade School
Macon, IL

Survival Math

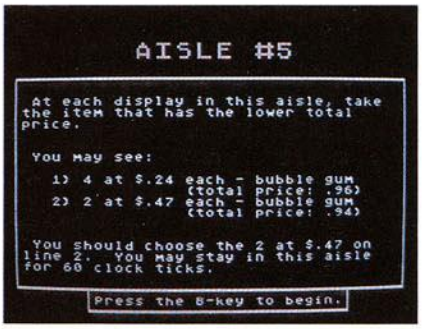
Computer: *TRS-80 Model I, III, IV; Atari; Commodore 64; Apple*
Topic: *Math*
Level: *Grades 4-Adult*

Survival Math is a collection of games that requires players to use their math knowledge in real life situations.

In "Smart Shopper Marathon," players find the best buys in the supermarket aisles. "Travel Agent Contest" gives users an opportunity to budget for a dream vacation. "Hot Dog Stand" involves running a business. And "Foreman's Assistant" uses measurement concepts to plan a playroom.

The program is an appropriate supplement to a regular math curriculum for upper elementary classes. I often use it with the good math students who finish early, do the work correctly, and have extra time. The teacher's guide contains handy reproducible worksheets and suggestions for classroom use. My students were very receptive to this unique approach to math.

Shopping in Survival Math.



```
            AISLE #5

 At each display in this aisle, take
the item that has the lower total
price.

 You may see:

   1) 4 at $.24 each - bubble gum
                (total price: .96)
   2) 2 at $.47 each - bubble gum
                (total price: .94)

 You should choose the 2 at $.47 on
line 2.  You may stay in this aisle
for 60 clock ticks.

        Press the B-key to begin.
```

Type of Software: Cassette for TRS-80; disk for all machines
Price: $50
Policy: Backup included; 30-day preview
Source: Sunburst Communications, Inc., 39 Washington Ave., Pleasantville, NY 10570; 800/431-1934. ☐

Barbara Devir
Teacher
Woodside School
Peekskill, NY

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4 Tear out reply card and mail promptly. Cards postmarked after expiration date cannot be processed.

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- ☐ c. Junior High
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- ☐ e. Junior/Senior
- ☐ f. College
- ☐ g. District
- ☐ h. State
- ☐ i. Federal/National
- ☐ j. Other

II. Your primary job (check one)
- ☐ 1. Administrative (including Superintendent/Principal)
- ☐ 2. Teaching (including Department Head)
- ☐ 3. Evaluation/Purchasing
- ☐ 4. Curriculum Development
- ☐ 5. Media Specialist/Librarian
- ☐ 6. Other

III. What is your primary involvement with computers?
- ☐ a. Actively use computers
- ☐ b. Recommend type/brand
- ☐ c. Approve purchase
- ☐ d. General interest
- ☐ e. All of the above

IV. Your school or district's investment in electronic learning materials.
- ☐ 1. Increasing
- ☐ 2. Decreasing
- ☐ 3. No Change

V. In which area does your school or district use computers? (check one)
- ☐ a. Interdisciplinary (elementary classroom)
- ☐ b. Math
- ☐ c. Reading
- ☐ d. Science
- ☐ e. Business/Vocational Education
- ☐ f. Computer Sciences
- ☐ g. Social Sciences
- ☐ h. English/Language Arts
- ☐ i. Other

VI. How does your school or district use computers?
- ☐ 1. Primarily for administrative purposes
- ☐ 2. Primarily for instructional purposes

VII. What type of software has your school/district purchased in the past year?
- ☐ a. Curriculum-based courseware
- ☐ b. Fun/Learning software
- ☐ c. Word Processing
- ☐ d. Utility
- ☐ e. Programming

VIII. Your school/district enrollment
- ☐ 1. Under 300
- ☐ 2. 300–499
- ☐ 3. 500–999
- ☐ 4. 1000–4999
- ☐ 5. 5000–9999
- ☐ 6. 10,000–24,000
- ☐ 7. 25,000 +

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- ☐ e. Junior/Senior
- ☐ f. College
- ☐ g. District
- ☐ h. State
- ☐ i. Federal/National
- ☐ j. Other

II. Your primary job (check one)
- ☐ 1. Administrative (including Superintendent/Principal)
- ☐ 2. Teaching (including Department Head)
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- ☐ 6. Other

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- ☐ e. All of the above

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- ☐ 1. Increasing
- ☐ 2. Decreasing
- ☐ 3. No Change

V. In which area does your school or district use computers? (check one)
- ☐ a. Interdisciplinary (elementary classroom)
- ☐ b. Math
- ☐ c. Reading
- ☐ d. Science
- ☐ e. Business/Vocational Education
- ☐ f. Computer Sciences
- ☐ g. Social Sciences
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- ☐ 5. 5000–9999
- ☐ 6. 10,000–24,000
- ☐ 7. 25,000 +

1	2	3	4	5	6	7	8	9	10
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61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
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91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130
131	132	133	134	135	136	137	138	139	140
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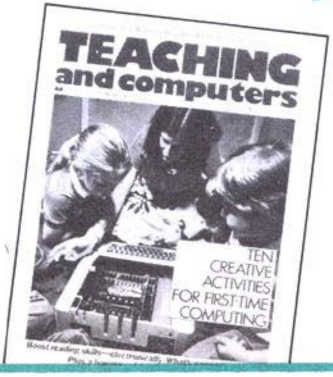

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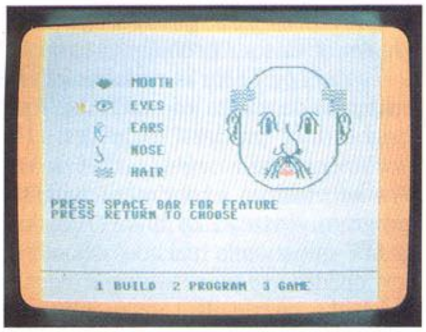


PRESS SPACE BAR FOR FEATURE
PRESS RETURN TO CHOOSE

Facemaker *lets kids build a face.*

Facemaker

Computer: *IBM; Commodore 64; Atari; Apple*
Topic: *Concentration, Memory*
Level: *Grades K-4*

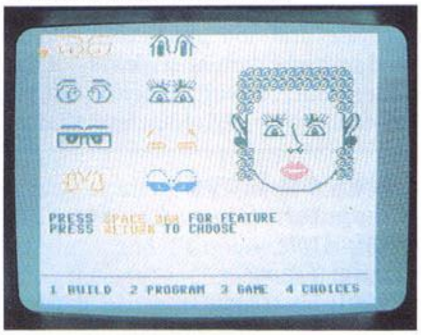
Build a face? That's exactly what *Facemaker* lets kids do. They choose among eight kinds of mouths, eyes, hair, noses, and ears to create a face on the screen. Then they program that face to smile, frown, cry, wink, stick out its tongue, or wiggle its ears by pressing the keys to represent these actions. Finally, they play a memory game where the child tries to repeat the sequence of faces shown on the screen. The sequence gets progressively harder based on success.

Facemaker gives the child constant choices to make. There are no right or wrong answers. It can be used in its simplest form by a very young child, but can also be challenging for older students.

Type of Software: Disk for IBM, Apple, and Atari; ROM Cartridge for Atari and Commodore 64
Price: $34.95 disk; $39.95 ROM cartridge
Policy: $12 backup
Source: Spinnaker Software, 215 First St., Cambridge, MA 02142; 617/868-4700. ☐

Evelyn J. Woldman
Computer Coordinator
Holliston Public Schools
Ashland, MA

Which set of eyes do you like?



PRESS SPACE BAR FOR FEATURE
PRESS RETURN TO CHOOSE

Teacher Utilities Volume 1

Computer: *Apple*

Teacher Utilities Volume 1 is for the busy and dedicated teacher who wants to create easy programs and fun activities. The disk contains 10 programs. "Block Letter" and "Posters" allow teachers to print messages and signs. "Crossword," "Crossword Edit," "Word Find," and "Word Find Edit" help the teacher create crossword and word search puzzles. And "Review Load," "Review," and "Test Generator" simplify testing students individually. "Frequency" and "Percent" perform statistical computations, but are too sophisticated for most elementary schools. Several of the programs require a printer.

In our school, we publicize many events, using the poster and block letter programs. Teachers can make lists on forms provided in the teacher's guide before they sit down at the computer. The guide explains each step.

Type of Software: Disk
Price: $40
Policy: Backup included; 30-day preview
Source: Minnesota Educational Computing Consortium (MECC), 2520 Broadway Dr., St. Paul, MN 55113; 612/638-0600. ☐

David Fiday
Media Director
Laraway District 70-C
Joliet, IL

(continued on page 62)

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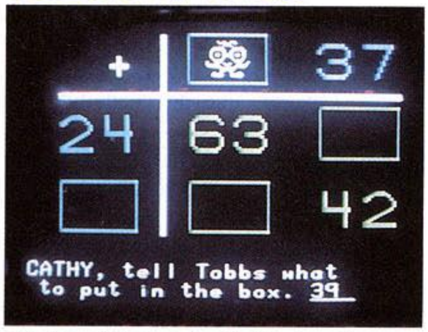
SOFTWARE SHOWCASE

(continued from page 61)

Teasers by Tobbs



```
+        37
24   63
         42

CATHY, tell Tobbs what
 to put in the box. 39
```

Solving a Teasers by Tobbs *puzzle.*

Computer: *TRS-80, Atari, Apple*
Topic: *Math*
Level: *Grades 3-Adult*

Meet Tobbs, an agile graphics creature. Players must tell Tobbs what number to put in a particular box in order to solve a puzzle. The puzzles provide drill and practice in addition and multiplication at six levels of difficulty. One to four students can play at each level. Level six lets students create their own puzzles. Score is shown after four problems.

Teasers by Tobbs is suitable for use with a wide range of students, from bright third graders to adults. The documentation suggests that teachers let children experiment with the program. Instead of answering students' questions, teachers should allow children to work with partners to solve the puzzle. But make sure kids understand the format of the problems first.

Type of Software: Cassette for TRS-80; disk for all machines
Price: $49 disk; $39 cassette
Policy: Backup included with disk; 30-day preview
Source: Sunburst Communications, Inc., 39 Washington Ave., Pleasantville, NY 10570; 800/431-1934. ☐

Barbara Devir
Teacher
Woodside School
Peekskill, NY

Kids on Keys

Computer: *Commodore 64; Atari; IBM; Apple*
Topic: *Typing*
Level: *Preschool-Grade 3*

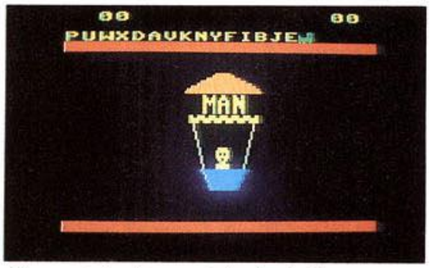
Letters and numbers float down the screen in Game 1. Type the letters and *zap*—they disappear. Numbers and letters fall faster as the level of difficulty increases. This is a fun way to teach kids how to type.

Students select one of three games and one of four levels of difficulty. In Game 2, students identify pictures as they float down the screen. And students match pictures and words in Game 3.

I use *Kids on Keys* with readers and nonreaders. The timing can be slow enough to avoid frustrating younger children, but can be fast enough to challenge older students.

Type of Software: ROM Cartridge for Atari and Commodore; disk for all machines
Price: $29.95 disk; $39.95 ROM cartridge
Policy: $12 backup
Source: Spinnaker Software, 215 First Street, Cambridge, MA 02142; 617/868-4700. ☐

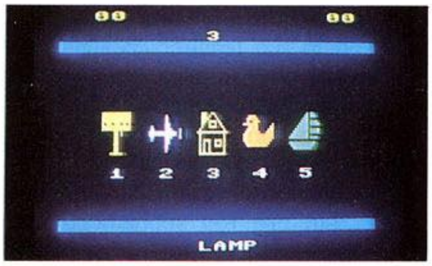
Beverly Canzater Jacobs
Computer Coordinator
East Cleveland City Schools
East Cleveland, OH



```
00                      00
PUWXDAVKNYFIBJE

        MAN
```

Players type the word in the balloon.



```
00                      00
            3

1    2    3    4    5

          LAMP
```

Learning words with Kids on Keys.

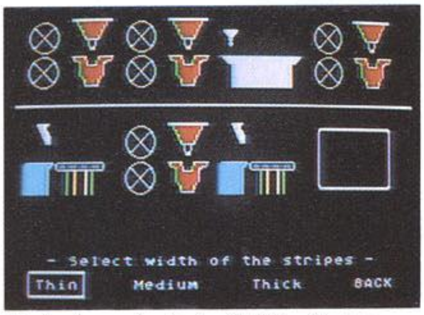
The Factory

Computer: *TRS-80 Color Computer; Commodore 64; Atari; Apple*
Topic: *Estimation, Spacial perception*
Level: *Grades 5-Adult*

You are the plant manager. Your challenge is to build a factory that will duplicate the product shown on the screen. Or you can challenge a friend to copy a product that you design.

Factory is a game that teaches, among other things, that there may be more than one solution to a problem. I go through the three programs in *Factory* with the class as an introduction. I also introduce the concept of angles at this time.

This program fits into a science unit on machines, but also works well with geometry and any unit that involves problem solving. I like the ideas for classroom activities in the documentation. Because *Factory* requires children to think, hypothesize, try, and retry, and finally meet the challenge, it is worth every penny of the cost.


- Select width of the stripes -

Designing a product with The Factory.

Type of Software: Disk
Price: $49
Policy: Backup included, 30-day preview
Source: Sunburst Communications, Inc., 39 Washington Ave., Pleasantville, NY 10570; 800/431-1934. ☐

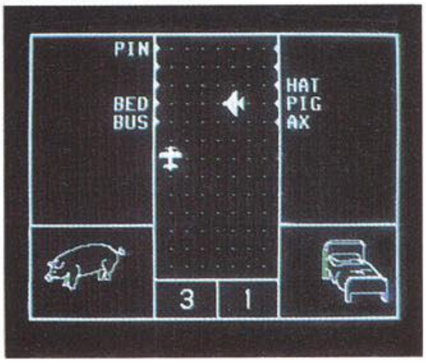
Ann Dana
Microcomputer Consultant
Hinsdale Junior High School
Hinsdale, IL

Spelling Bee Games

Computer: *Atari; Franklin Ace, Apple*
Topic: *Language Arts*
Level: *Grades K-4*

A truck at the bottom of the screen holds a load of letters in mixed order. As helicopter pilot, your mission is to fly to the truck, pick up the letters, transport them to the picture they identify, and place them in correct order. That's how to play "Skyhook," one of the four games that teach spelling, reading, and motor skills.

Players use joysticks to identify objects in Spelling Bee Games.



The other games are "Squadron," "Puzzle," and "Convoy." In each game, the student must spell words or match pictures with words. Two of the games require paddles. A special option allows the teacher to select the word lists ranging in difficulty from two-letter words to multi-syllable words. Two to four children can play the games at one time. And each game is short enough to allow children to have a turn. I use it with young children and older, remedial students.

Type of Software: Cassette for Atari; disk for all machines
Price: $39.95 disk; $29.95 cassette
Policy: $7 backup; $10 for multiple copies
Source: EduWare Services, Inc., P.O. Box 22222, 28035 Dorothy Drive, Agoura Hills, CA 91301; 213/706-0661. ■

Betty Iossi
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Taft School
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First prize is $200, to be awarded to the winner in each category; second prize for each category is $100; and third prize for each category is $50.

To enter the contest, send a color photo or slide of your computer center and a written description of how you decorated it to: Beautiful Computer Centers Contest, *Teaching and Computers,* 730 Broadway, New York, NY 10003. Entries must be postmarked no later than February 1, 1984.

Winning centers will appear in a future issue of *Teaching and Computers*. Entries cannot be returned unless accompanied by a self-addressed, stamped envelope. All photos, descriptions, and other material submitted by prize winners become the exclusive property of *Teaching and Computers.*

Entry Form: Beautiful Computer Centers Contest

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Deadline: February 1, 1984

Name: ____________________ Grade: ____
School: ____________________
Home address: ____________________
Home phone: ____________________
Category: ____________________

READINESS REPRODUCIBLES

Two Worksheets on Processing

The next two pages are worksheets that show children how humans and computers solve problems. Tear the worksheets out, run them off, and you have a computer lesson.

Tell students that humans use a *process* to solve problems. A process is a series of actions that change raw material (input) into a final product (output).

Display the following chart:

Input	Process	Output
wet hair		dry hair
hot room		cool room

Tell kids that *input* is material that is given in the beginning of a problem. *Output* is what is received after a problem is solved.

Say you have wet hair (input), but you want dry hair (output). What *process* do you go through to change wet hair to dry hair? (Blow drying.)

Have children fill in the chart. Then hand out the worksheet entitled "What Is a Process?" On this sheet, the input and process are given for three problems. Students are to draw the output for each.

Computers can solve problems the same way humans do. Display the following chart:

Input	Process	Output
7+2		9
7-2		5

Have a child type 7+2 into a computer and press RETURN or ENTER.

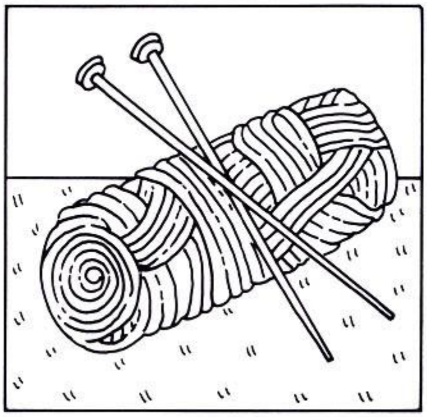
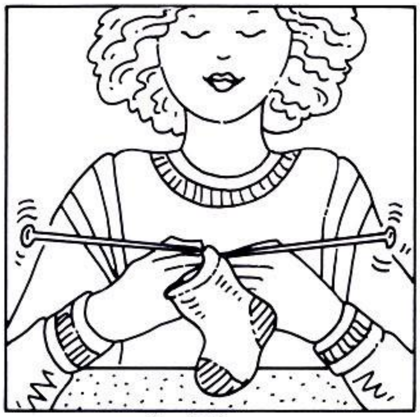
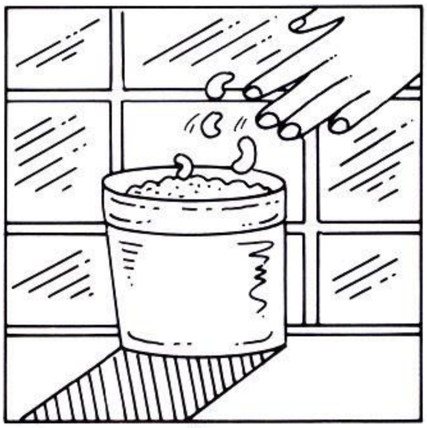
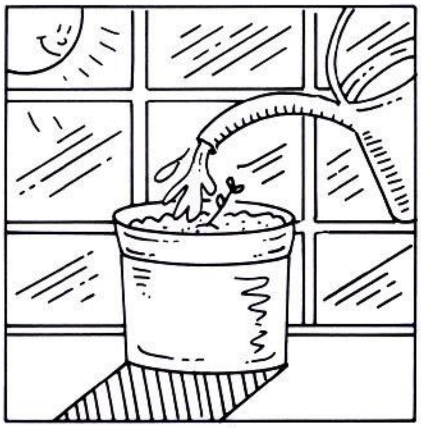
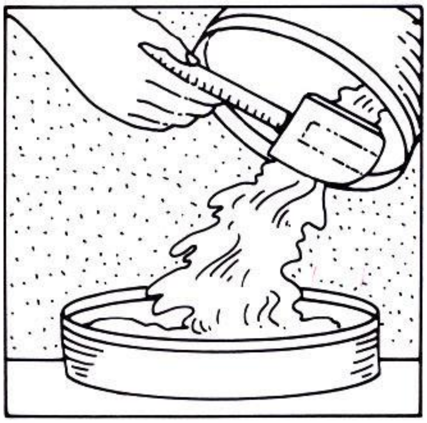
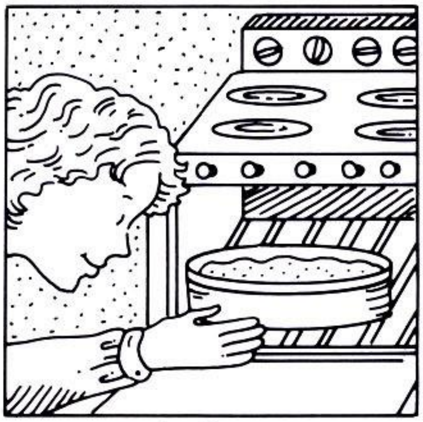
This is input. It tells the computer to perform a process inside the keyboard. Once the adding is done, the computer will display the output—9.

Fill in the chart. Then hand out the second worksheet. Input and process are given for five problems. Students are to fill in the output (2,5,3,9,3). □

NAME ____________________

What Is a Process?

A process turns input into output.
Draw the output for each.

Input	Process	Output
 yarn	 knitting	mittens
 plant	 watering	flower
 batter	 baking	cake

THERESA ANDERKO

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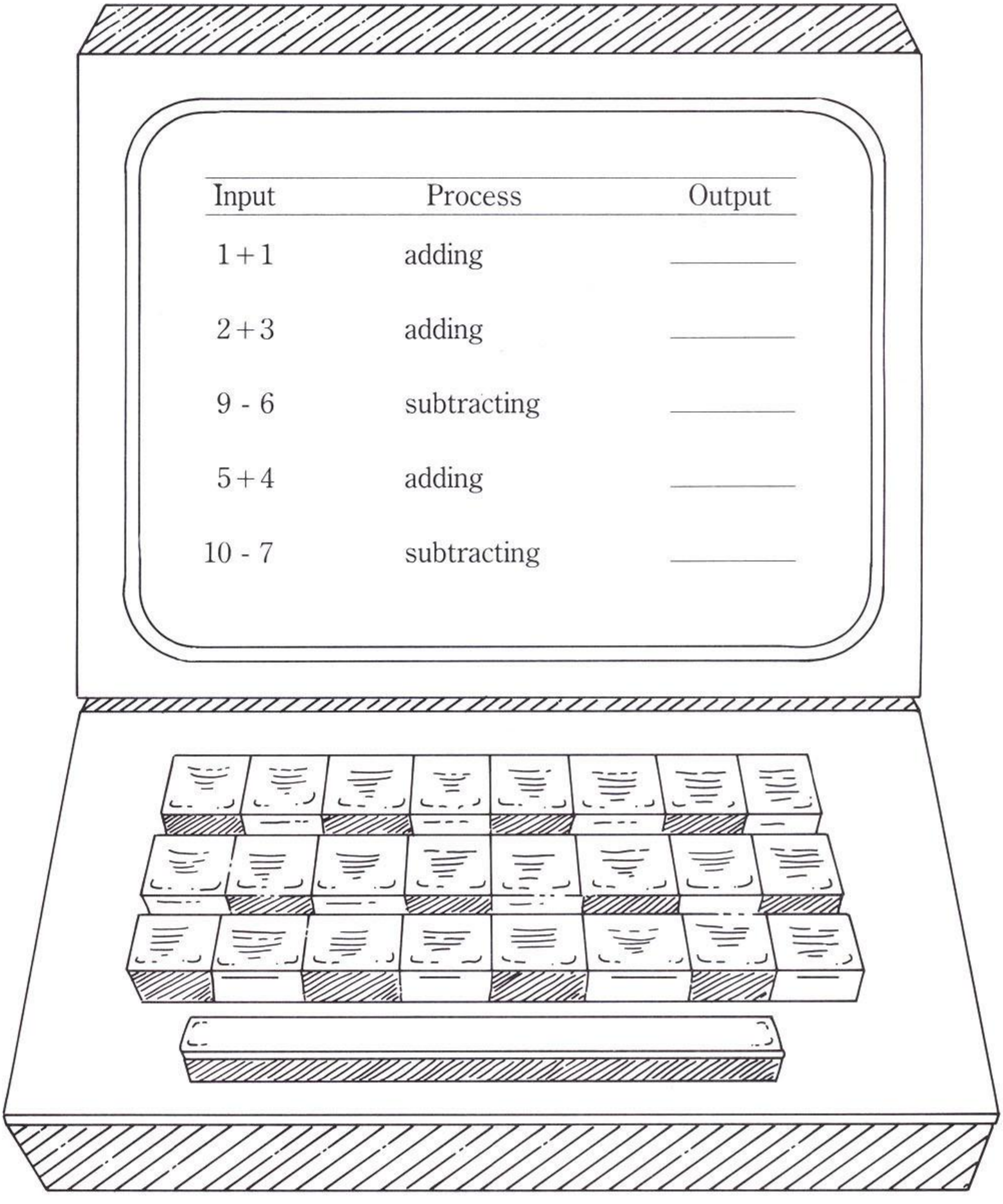
READINESS REPRODUCIBLES

(continued from page 65)

NAME ______________________

Computer Processes

Write the output for each.



Input	Process	Output
1 + 1	adding	
2 + 3	adding	
9 - 6	subtracting	
5 + 4	adding	
10 - 7	subtracting	

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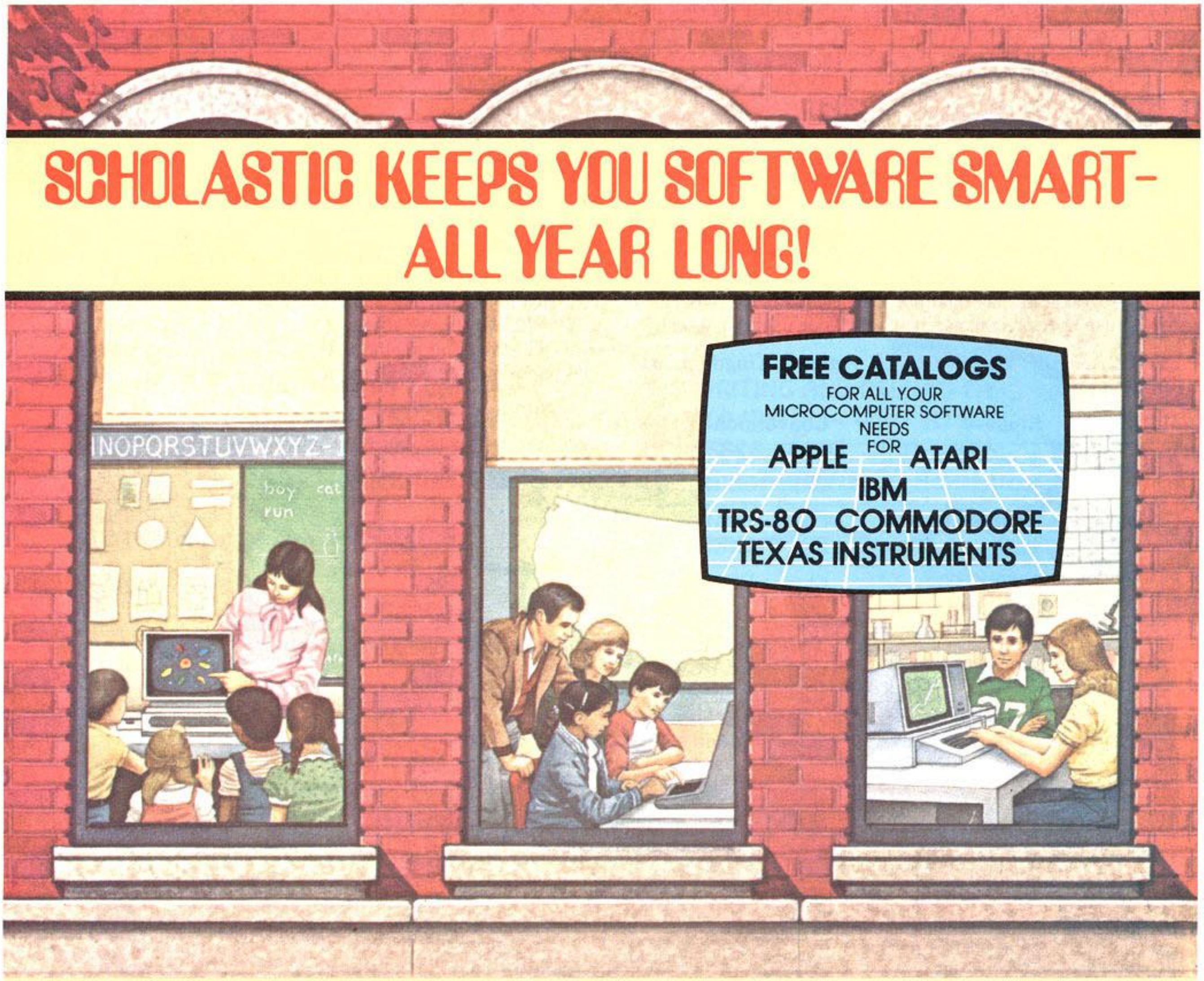

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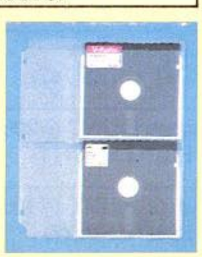

With your program, you get a heavy-gauge 8½" x 11" vinyl storage pouch-page that's three-hole punched for standard 8½" x 11" ring binders, and capable of holding two disks or four cassettes. Also included is Scholastic's Information Sheet which summarizes important program data: grade level, instructional objectives, loading instructions and a brief description of the program.

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How to Convert *T&C* Programs to Other Machines

Several programs in this issue of *Teaching and Computers* are written for one specific computer. Use this chart to convert those programs for use on other machines. For more details on how to use specific commands, check your user's manual.

PROGRAM OF THE MONTH: *Animal Kingdom,* page 46, (Apple)

Machine	Lines	Conversion
Atari	5, 60, 2000, 3020, 4000	Change HOME to PRINT CHR$(125)
Commodore	5, 60, 2000, 3020, 4000	Change HOME to PRINT CHR$(147)
Radio Shack	5, 60, 2000, 3020, 4000	Change HOME to CLS
TI	5, 60, 2000, 3020, 4000	Change HOME to CALL CLEAR

WRITE YOUR OWN ADVENTURE STORIES: *Weelywockers* Program, page 24 (TRS-80 Models I/III)

Machine	Lines	Conversion
Apple	10, 29, 65, 1999, 4002, 5000	Change CLS to HOME
	20	Change PRINT @200 to HTAB 15: PRINT
	25	Change PRINT @400 to HTAB 18: PRINT

Editor's Note: The *Weelywockers* program is written at 64 characters per line of text. Because your computer can print only 40 characters per line, when lines are longer than 40 characters, you must cut the PRINT statements at 40 characters and add an extra PRINT statement for the rest of the line.

Machine	Lines	Conversion
Atari	10, 29, 65, 1999, 4002,5000	Change CLS to PRINT CHR$(125)
	20	Change PRINT @200 to POSITION 14,6
	25	Change PRINT @400 to POSITION 7,8

Editor's Note: See note under Apple.

Machine	Lines	Conversion
Commodore	10, 29, 65, 1999, 4002, 5000	Change CLS to PRINT CHR$(147)
	20	Change PRINT @200 to PRINT SPC(14)
	25	Change PRINT @400 to PRINT SPC(7)

Editor's Note: The *Weelywockers* program is written at 64 characters per line of text. The VIC-20 computer can print only 22 characters per line. When needed, VIC-20 users must cut the PRINT statements to 22 chartacters and add an extra PRINT statement for the rest of the line. PET and Commodore 64 users: see note under Apple.

Machine	Lines	Conversion
TI	10, 29, 65, 1999, 4002, 5000	Change CLS to CALL CLEAR
	20	Change PRINT @200 to PRINT TAB(15)
	25	Change PRINT @400 to PRINT TAB(18)

Editor's Note: See note under Apple.

FIVE EASY GRAPHICS TO MAKE, page 30, (Apple)

BASIC graphics commands differ greatly among the top five microcomputer brands. Because of this, author Dave Kirchner does not recommend using his graphics lesson with Commodore or TI machines. For an Atari or Radio Shack version of the *Mr. Computer* and *Airplane* graphics, send a self-addressed, stamped envelope to: Graphics Modifications, *Teaching and Computers*, 730 Broadway, New York, NY 10003. To use the general graphics lesson plan on Atari and Radio Shack machines, refer to the chart below for general command conversions.

Machine	Conversion
Atari	Change GR to Graphics 3
	Change HLIN X,Y AT Z and VLIN X, Y AT Z to DRAWTO X,Y
	Change COLOR = C to COLOR C
Radio Shack Color Computer	Change command sequence COLOR = C; PLOT X,Y to SET (X,Y,C)

Editor's Note: The graphics screen on the Color Computer is 64 X 32 characters. The HLIN X,Y AT Z and VLIN X,Y AT Z commands for the Apple do not have a direct equivalent on Radio Shack computers. Have students plot individual points in the line. More advanced students can use a FOR NEXT loop to produce a line. For example, FOR X = 1 TO 20: SET (X,10): NEXT X will produce a horizontal line from column one to 20 at row 10.

Machine	Conversion
TRS-80 Model III	Change PLOT X,Y to SET (X,Y)
	Delete COLOR = C

Editor's Note: The graphics screen on the TRS-80 Model III is 127 X 47 characters. See note under Radio Shack Color Computer for information on drawing lines. ■

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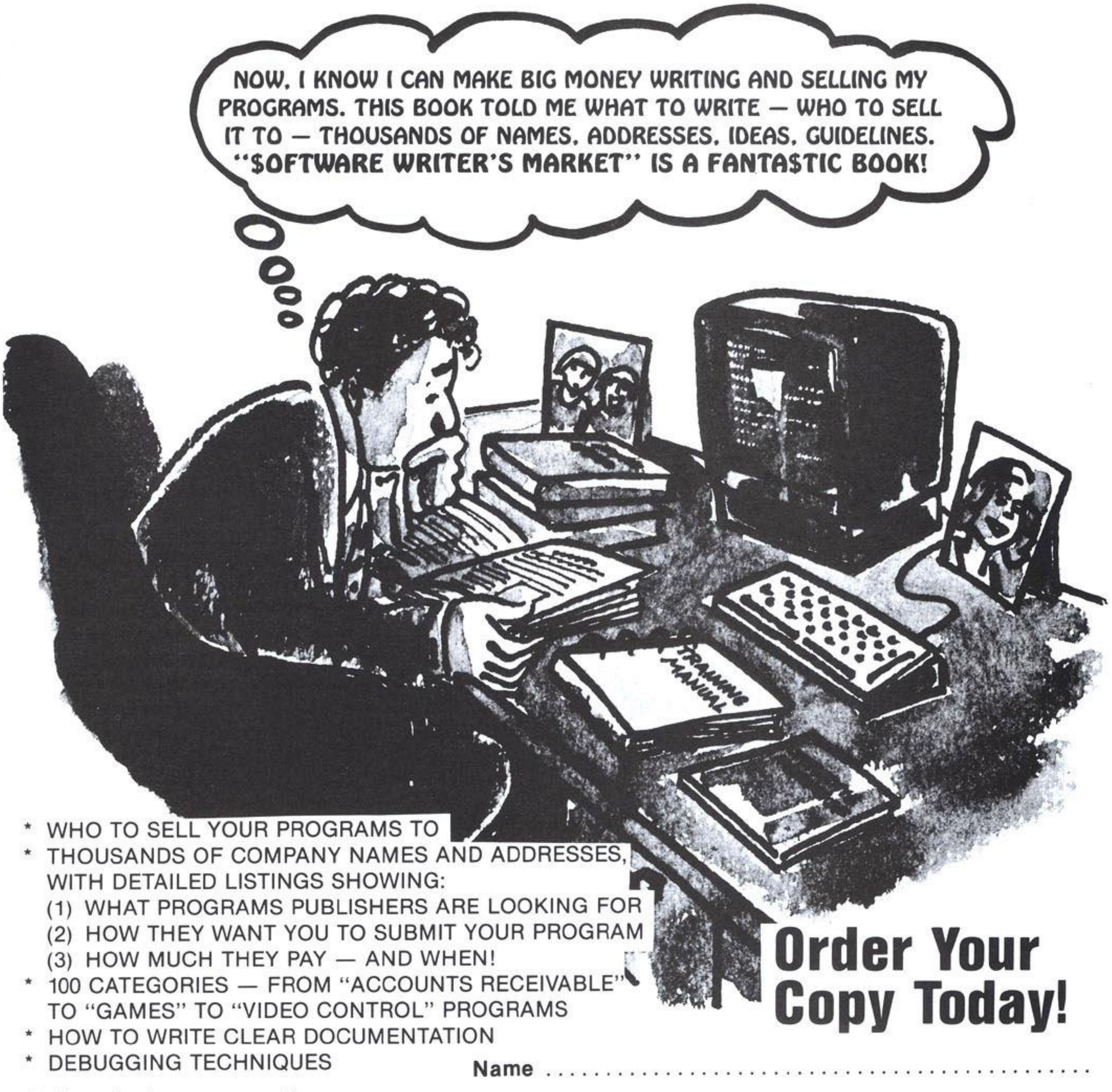
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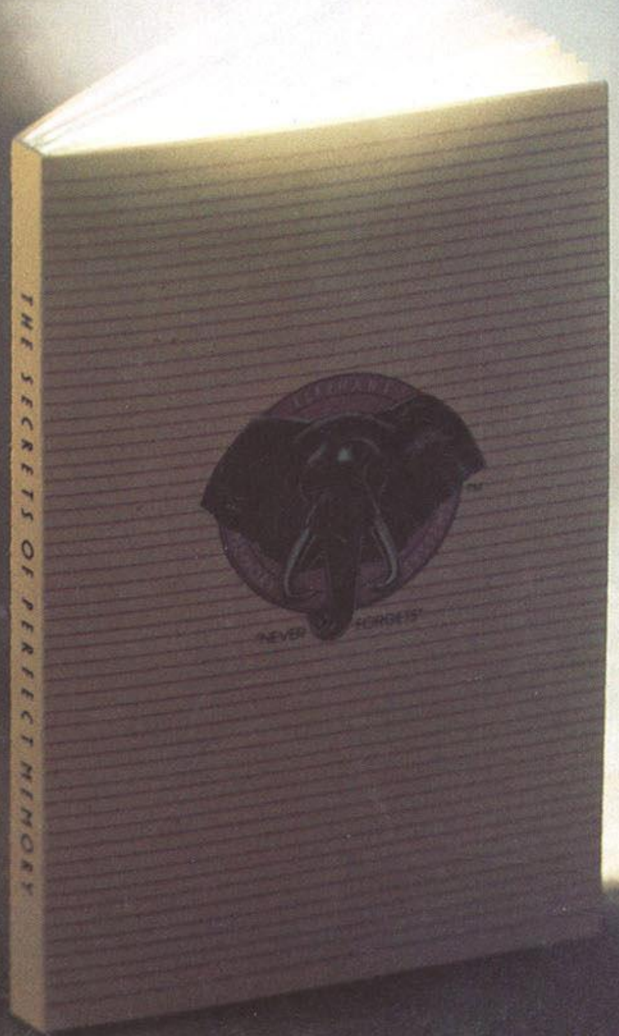

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